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D E C I S I O N
of 19 January 1994

Case Number: T 0794/92 - 3.2.5

Application Number: 89103647.7

Publication Number: 0340405

IPC: B24D 9/04

Language of the proceedings: EN

Title of invention:

Cutting tool

Applicant:

Cincinnati Milacron Inc.

Opponent:

-

Headword:

Cutting tool/CINCINATTI

Relevant legal norms:

EPC Art. 56

EPC R. 67

Keyword:

"Inventive step (yes)"

Decisions cited:

-

Catchword:

-

Case Number: T 0794/92 - 3.2.5

D E C I S I O N
of the Technical Board of Appeal 3.2.5
of 19 January 1994

Appellant: Cincinnati Milacron Inc.
4701 Marburg Avenue
Cincinnati
Ohio 45209 (US)

Representative: Lally, William
Forrester & Boehmert
Franz-Joseph-Straße 38
D - 80801 München (DE)

Decision under appeal: Decision of the Examining Division of the European Patent Office dated 23 March 1992 refusing European patent application No. 89 103 647.7 pursuant to Article 97(1) EPC.

Composition of the Board:

Chairman: C.V. Payraudeau
Members: A. Burkhart
M.H.M. Liscourt

Summary of Facts and Submissions

I. The Appellant (Applicant) lodged an appeal against the decision of the Examining Division to refuse the application No. 89 103 647.7.

The Examining Division found that the application did not meet the requirements of Article 56 EPC, having regard to the following documents:

D1: US-A- 967 592 and

D2: FR-A-1 129 202.

II. In a communication pursuant to Article 11(2) of the Rules of Procedure of the Boards of Appeal, the Board cited the following additional prior art documents which had already been cited in the Search Report or in the originally filed description:

D3: US-A-3 118 259,

D4: FR-A- 850 928 and

D5: CALM-Brochure, filed by the Appellant together with his Statement of Grounds of appeal on 23 July 1992.

III. In his Statement of Grounds of appeal, the Appellant has requested, among others, that the appeal fee be reimbursed, since he considered the conduct of the Examining Division as constituting an abuse of procedure and therefore a substantial procedural violation.

IV. Oral proceedings were held on 19 January 1994.

- (i) The Appellant requested that the decision under appeal be set aside and a patent be granted on the basis of the following documents:

Description: pages 1, 3 to 14, as
originally filed;

pages 2, 2a and 15, filed on
2 April 1991;

Claims: 1, filed on 6 December 1993;
2 to 12, filed on 2 April 1991;

Drawings: sheets 1/5 to 5/5, as originally
filed.

- (ii) Claim 1 reads as follows:

"A cutting tool for removing material from a workpiece including:
rotatable means (10, 40, 70, 98) having a substantially rigid circumferential surface;
said rotatable means having a recess (11, 41, 71, 101) therein; said rotatable means having a transverse slot (12, 42, 72, 102) extending through said circumferential surface to said recess (11, 41, 71, 101) to communicate said recess exterior of said circumferential surface of said rotatable means; a belt (19, 99) removably mounted on said circumferential surface of said rotatable means, said belt having material removal means for removing material from a workpiece when said belt engages the workpiece during rotation of said rotatable means; said belt having each of its ends (25,

27; 117, 120) extending through said slot (12, 42, 72, 102) into said recess in said rotatable means; first engageable means (24, 54, 76, 108) being provided in said recess engageable with one end (25, 117) of said belt and movable by centrifugal force in response to the rotation of the rotatable means to produce a belt tension which increases with the speed of rotation of said rotatable means; characterised by the provision of second engageable means (26, 55, 77, 109) in said recess engageable with the other end (27, 120) of said belt and movable by centrifugal force in response to the rotation of the rotatable means to produce a belt tension which increases with the speed of rotation of said rotatable means."

(iii) The Appellant essentially argued as follows:

The construction according to documents D2, D3 and D4, wherein both ends of the grinding belt are tensioned by a tensioning means, is not suitable in high-speed grinding to prevent the belt from being moved away from the circumferential surface of the wheel due to the increased centrifugal force created thereon. Therefore, the person skilled in the art would not take into consideration these documents when he wanted to improve the high-speed grinding tools according to document D1 or D5, wherein a belt engaging means movable by centrifugal force increases the tension of the belt as the speed of rotation increases.

Document D5 demonstrates that since the time of document D1, which was published in the year 1910 till the date of filing of the present application, the tensioning of one end only of the belt in high-speed grinding tools had been current practice. The person skilled in the art would have seen no need to tension the belt from both ends, since in the device according to document D1 or D5, a sufficient tensioning force could have been expected even in tools rotating with a very high speed, due to the centrifugal force tensioning means acting on one end of the belt.

The tensioning of both ends of the belt by separate centrifugal force tensioning means, as claimed in Claim 1, provides the unexpected benefit of obtaining a higher grinding quality.

Reasons for the Decision

1. *Amendments*

The features of Claim 1 are disclosed in the originally filed Claims 1 and 2 and on originally filed page 4, lines 15 to 18.

Claims 2 to 12 are identical with the originally filed Claims 2 to 12, except that the words "in which" are replaced by the words "characterised in that".

In the description a further prior art discussion has been added.

Therefore, no objection under Article 123(2) EPC arises with respect to the amendments.

2. *Novelty*

The subject-matter of Claim 1 has to be regarded as being new, since none of the documents under consideration discloses a cutting tool comprising all the features of Claim 1.

Novelty, in fact, has not been in dispute in these proceedings.

3. *Inventive step*

3.1 The closest prior art is represented by document D1 or D5.

These documents disclose a cutting tool for removing material from a workpiece including rotatable means having a substantially rigid circumferential surface, said rotatable means having a recess therein, said rotatable means having a transverse slot extending through said circumferential surface to said recess to communicate said recess exterior of said circumferential surface of said rotatable means, a belt removably mounted on said circumferential surface of said rotatable means, said belt having material removal means for removing material from a workpiece when said belt engages the workpiece during rotation of said rotatable means, said belt having each of its ends extending through said slot into said recess in said rotatable means, an engageable means being provided in said recess engageable with one end of said belt and

movable by centrifugal force in response to the rotation of the rotatable means, the other end of said belt being fixed inside the said recess.

- 3.2 The Appellant has found that this prior art cutting tool did not produce high quality grinding at high rotational speeds.

Therefore, the problem underlying the invention consists in improving the cutting tool known from documents D1 or D5 such that a high quality grinding at high rotational speed of the tool is obtained.

- 3.3 This problem is solved in that the tool known from documents D1 or D5 is modified in the sense that, instead of fixing only the other end of the belt, a further engageable means is provided in the recess engageable with the other end of the belt and movable by centrifugal force in response to the rotation of the rotatable means to produce a belt tension which increases with the speed of rotation of the rotatable means.

This solution has the effect that even at very high rotational speeds of the tool, the belt all over its entire length - both upstream and downstream of the point of grinding contact - is firmly held in contact with the circumferential surface of the tool wheel, and thus no slack or rippling of the belt occurs, which could adversely affect the grinding quality.

- 3.4 This solution is not rendered obvious by the prior art, for the following reasons.

Among the numerous documents cited in the description or in the Search Report, documents D2, D3 and D4 are the only documents which show grinding tools, wherein both ends of the grinding belt are tensioned by a tensioning means. However, these tensioning means exert on the belt a certain tension force which is set at the mounting stage and which remains constant during the operation of the tool. Thus, these tools have the disadvantage that, when the tool is operated at very high rotational speeds as are nowadays utilised in grinding, the belt may be moved away from the circumferential surface of the tool wheel due to the centrifugal force created thereon, and that this slack of the belt results in poor grinding quality.

The person skilled in the art, looking for a solution to the problem mentioned under paragraph 3.2 above, would therefore not take into consideration documents D2, D3 or D4.

Document D5, which represents the pertinent state of the art of high-speed grinding at the time of the filing date of the present patent application, demonstrates that since the year 1910 (publishing year of document D1) the persons skilled in the art have held that the tensioning of the belt from one end by a means responding to centrifugal force is sufficient for keeping the belt in proper position during the grinding operation (see document D5, page 1, left-hand column, penultimate sentence).

With respect to this situation, it was not obvious for the person skilled in the art to take the measure of providing in a tool according to document D1 or D5 also

at the other end a tensioning means movable by centrifugal force, a measure which renders the tool more complicated and more expensive.

- 3.5 Therefore, the subject-matter of Claim 1 must be regarded as involving an inventive step within the meaning of Article 56 EPC.
4. Consequently, Claim 1 is allowable under Article 52(1) EPC.
5. Claim 1 being allowable, the same applies to the dependent Claims 2 to 12 which concern preferred embodiments of the cutting tool according to Claim 1.
6. The Appellant has requested the refund of the appeal fee on the ground that the first (positive) communication of the Examining Division dated 21 February 1991 constituted a "clear abuse of procedure" because it did not state the grounds why the claims met the requirement of Article 52(1) EPC contrary to the provisions of Rule 51(3) EPC.

The Board cannot share this view. Rule 51(3) EPC provides that the communication shall contain a reasoned statement covering, where appropriate, all the grounds **against the grant** of the European patent. Since it appears that, at the time the communication dated 21 February 1991 was given, the Examining Division was only raising formal objections to the grant of the patent, only the grounds of these objections had to be given in the communication. Therefore, the communication of 21 February 1991 cannot be considered as vitiated with a procedural violation.

The Appellant has also based his request for refund of the appeal fee on the fact that the documents cited in the European Search Report were all listed in category A, that the first communication was favourable regarding inventive merit and that at the last moment the Examining Division changed its mind.

That such a situation may happen is unavoidable. It may be considered as regrettable, but it is in no way a procedural violation, the Examining Division not being bound until its final decision of grant or refusal by any opinion expressed either by the Search Division or by itself.

Therefore, the request for refund of the appeal fee is rejected.

Order

For these reasons, it is decided that:

1. The decision under appeal is set aside.
2. The case is remitted to the first instance with the order to grant a patent on the basis of the documents mentioned under point IV(i) of this decision.

The Registrar:

The Chairman:

A. Townend

C. Payraudeau