BESCHWERDEKAMMERN DES EUROPÄISCHEN PATENTAMTS

BOARDS OF APPEAL OF THE EUROPEAN PATENT OFFICE

CHAMBRES DE RECOURS DE L'OFFICE EUROPEEN DES BREVETS

A		B		C	X

File No.: T 0475/90 - 3.2.5

Application No.: 85 200 147.8

Publication No.: 0 156 405

Classification: B21B 1/08

Title of invention: Roll forming procedure with slitting of angle bars and T-beams

D E C I S I O N
of 7 July 1993

Applicant: Danieli & C. Officine Meccaniche S.p.A.

Proprietor of the patent: -

Opponent: SMS Schloemann-Siemag AG

Headword:

EPC: Art. 56

Keyword: "Inventive step (yes)"

Headnote
Catchwords

Europäisches Patentamt | European Patent Office | Office européen des brevets

Beschwerdekammern | Boards of Appeal | Chambres de recours

Case Number: T 0475/90 - 3.2.5

D E C I S I O N
of the Technical Board of Appeal 3.2.5
of 7 July 1993

Appellant: (Proprietor of the patent)
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Decision under appeal: **Decision of the Opposition Division of the European Patent Office dated 11 May 1990 revoking European patent No. 0 156 405 pursuant to Article 102(1) EPC.**

Composition of the Board:

Chairman: C.V. Payraudeau
Members: A. Burkhart
H.J. Seidenschwarz

Summary of Facts and Submissions

I. The Appellant (Patentee) appealed against the decision of the Opposition Division, by which the European patent No. 0 156 405 had been revoked on the ground that its subject-matter did not involve an inventive step having regard to the teachings of the following prior art documents:

D1: US-A-4 193 283

D2: J. Puppe and G. Stauber, "Walzwerkswesen", 2nd Volume, 1934, published by Verlag Stahleisen m.b.H. and Verlag Julius Springer, Düsseldorf/Berlin, pp. 380-381

D3: Ernest E. Brayshaw, "Rolls and Rolling/Rails", pp. 302-305.

II. Oral proceedings were held.

(i) The Appellant requested that the decision under appeal be set aside and that the patent be maintained in amended form on the basis of the documents (description, Figures 1 and 2) filed with the letter of 25 March 1993, received on 2 April 1993, and the single claim filed during the oral proceedings.

(ii) The single claim reads as follows:

"Process for roll-forming of T-beams (21) starting from a semi-finished rolled product (210) as a billet and comprising the steps of:

a) providing, in a first series of rolling passes, a rolled product including two relatively thick areas having the same cross-

section (19) and separated by a relatively thinner web (20);

b) slitting said relatively thinner web (20) in the longitudinal direction of said rolled products and obtaining in such way two rolled products;

c) carrying out a second series of rolled passes on said rolled products, thus obtaining two T-beams (21),

wherein said steps a) and b) are performed by making use of rolling gauges for roll forming of I-beams, while said step c) is performed by making use of rolling gauges for rolling beams of T-shaped cross section, said beams being rotated by 90° before the last rolling pass, said rolled beams being moved in parallel on the same rolling line and being rolled within neighbouring gauges of said rolls."

(iii) The Appellant's submissions can be summarised as follows:

Document D1 does not disclose or suggest the essential features of the process according to the claim of the contested patent, namely the use of rolling gauges, which are normally used for obtaining I-beams, in a first series of rolling passes before the slitting step and the rotation of the T-beams by 90° before the last rolling pass, in order to enhance the productivity of the process for obtaining T-beams.

The documents D2 and D3 are concerned with slitting of worn railway rails and re-rolling the slitted parts thereof into re-usable final shape bars. However, these documents do not

refer to a continuous process for roll-forming of T-beams starting from a semi-finished rolled billet, and these documents do not suggest to employ in such a process the sequence of production steps as claimed in the claim of the contested patent.

III. The duly summoned Respondent (Opponent) was not present at the oral proceedings having previously informed the Board of Appeal that he would not appear. The oral proceedings were continued without him (Rule 71(2) EPC). The Respondent had requested in writing that the appeal be dismissed.

His written submissions can be summarised as follows:

The only features of the subject-matter of the contested patent, which are not disclosed in document D1, namely the rolling of T-beams and the rotation of the T-beams before the last rolling pass, are disclosed in and suggested by document D3.

Therefore, the process claimed in the contested patent is obvious in the light of the teachings of documents D1 and D3.

Reasons for the Decision

1. *Amendments*

1.1 The features of the single amended claim are disclosed in the originally filed Claims 1, 6 and 7; in the originally filed description on page 1, lines 11 to 14, on page 4, line 6, on page 6, line 27 to page 7, line 16; and in the originally filed Figures 5 and 6.

The description and drawing have been adapted to the new single claim by deleting from the originally filed application documents the parts of the description and the Figures of the drawings which are no longer covered by the new claim.

Therefore, the amended patent specification complies with Article 123(2) EPC.

1.2 The new single claim contains all the features of Claim 3 of the granted patent and the additional features "said beams being rotated by 90° before the last rolling pass, said rolled beams being moved in parallel on the same rolling line and being rolled within neighbouring gauges of said rolls".

Therefore, the scope of protection of the claim has been restricted, and consequently, the new single claim complies also with Article 123(3) EPC.

2. *Novelty*

2.1 Document D1 discloses a process for roll-forming of elongated metal bars starting from a semi-finished rolled product as a billet and comprising the steps of providing, in a first series of rolling passes, a rolled product including two relatively thick areas having the same cross-section and being separated by a relatively thinner web,
slitting said relatively thinner web in the longitudinal direction of said rolled product and obtaining in such way two rolled products,
carrying out a second series of rolled passes on said rolled products, thus obtaining two metal bars having the desired cross-sectional shape,

wherein the rolled bars are moved in parallel on the same rolling line and are rolled within neighbouring gauges of the rolls.

The process according to the claim of the contested patent differs from this known process in that the first series of rolling passes is performed by making use of rolling gauges for roll-forming of I-beams, while the second series of rolling passes is performed by making use of rolling gauges for rolling beams of T-shaped cross-section, and in that the beams are rotated by 90° before the last rolling pass.

2.2 Documents D2 and D3 disclose the slitting of used railway rails into a plurality of sections which are then rolled independently from each other into final-shaped elongated bars.

The process according to the claim of the contested patent differs substantially from this prior art in that it starts from a semi-finished rolled product as a billet and in that the rolling and slitting steps according to paragraphs (a) to c)) of the claim are carried out by moving the beams in parallel on the same rolling line and by rolling within neighbouring gauges of the rolls.

Therefore, the process according to the single claim of the contested patent is new with respect to the prior art under consideration.

3. *Inventive step*

3.1 The problem underlying the invention consists in producing T-beams at a high productivity rate and with high quality (see column 2, lines 9 to 21 of the granted patent).

3.2 This problem is solved by a process comprising the features of the claim of the contested patent, in particular, those features which are new with respect to the process known from document D1, namely

(i) that the first series of rolling passes is performed by making use of rolling gauges for roll-forming of I-beams,

(ii) that the second series of rolling passes is performed by making use of rolling gauges for rolling beams of T-shaped cross-section, and

(iii) that the T-beams are rotated by 90° before the last rolling pass.

The use of the features (i) and (ii) has the advantage that throughout the whole rolling process only rolling gauges are involved which from the beginning (I-beam gauge which in fact includes already a double-T-shape) to the end (separate T-beam gauge) are purposefully directed to the desired final T-beam shape. Thus, the final product can be obtained by the minimum number of rolling passes.

The feature (iii) has the effect that the uniformity of the mechanical properties of the T-beams is enhanced.

3.3 This solution is not rendered obvious by the teachings of the documents (D1) to (D3) for the following reasons:

Document (D1) describes a method for the production of elongated metal bars, wherein a billet is roll-formed in a first series of rolling passes into a double-stranded bar interconnected by a continuous thin node, which double-stranded bar is then rolled in a further series of rolling passes to reduce the cross-section of each

strand equally, whereby compressive working force is applied to create lateral tensile forces such that the strands diverge and separate.

The only detailed example described and depicted in document (D1) refers to the use of rolling gauges for roll-forming beams or bars having, successively, square, flat and round cross-sectional shapes. The general statement in column 3, lines 18 to 20 of document (D1) "It will also be appreciated that the cross-sectional shape of the final product may be of any desired cross-sectional bar shape", referred to by the Opponent, does in no way suggest to the person skilled in the art to use the features (i) and (ii) in the process described in document D1.

Moreover, there is no mention or hint in document D1 to the aforementioned feature (iii).

Therefore, document D1 neither discloses nor suggests any of the features (i) to (iii) mentioned above.

The documents D2 and D3 are concerned with roll-forming of sections of used rails into bars having various shapes, like rounds, angles and tees. However, documents D2 and D3 are out of all relation to a continuous process for roll-forming of T-beams starting from a semi-finished rolled billet, wherein the rolled beams are moved in parallel on the same rolling line and are rolled within neighbouring gauges of the rolls.

Therefore, the teachings of these documents can, by no means, incite the person skilled in the art to use the above-mentioned features (i) to (iii) in a process known from document D1.

In conclusion, the process according to the single claim of the contested patent involves an inventive step within the meaning of Article 56 EPC.

4. For the foregoing reasons, the subject-matter of the single claim complies with Article 52(1) EPC.

5. The patent can be maintained as amended according to the request of the Appellant.

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 for maintenance of the patent in amended form on the basis of the following documents:

Description and drawing, filed on 2 April 1993,
Single claim, filed during the oral proceedings on 7 July 1993.

The Registrar: The Chairman:

A. Townend C. Payraudeau