(54) Title: A METHOD TO REDUCE END DEFECTS IN ROLLING OF SECTIONS

(57) Abstract: The present invention aims at reducing the cropping losses formed during reversible multi pass hot rolling of flat ended bloom into bars by designing the preform end shapes using finite element analysis and a method to provide the designed preform end shapes to the input blooms. A three dimensional simulation of the reversible multi pass hot rolling process with flat ended input bloom predicts the formation of defective end shapes after rolling and reverse material tracking is applied to finite element simulations to obtain desired preform end shapes of the input bloom and similar simulations on the bloom with preformed end shape shows considerable reduction in cropping losses.

Declarations under Rule 4.17:
— as to the identity of the inventor (Rule 4.1.7(i))
— as to applicant’s entitlement to apply for and be granted a patent (Rule 4.1.7(H))

Published:
— of inventorship (Rule 4.1.7(iv))
— with international search report (Art. 21(3))
— before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments (Rule 48.2(h))

(88) Date of publication of the international search report: 10 April 2014
INTERNATIONAL SEARCH REPORT

A. CLASSIFICATION OF SUBJECT MATTER

IPC(8) - B21B 15/00 (2014.01)
USPC - 72/200

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
IPC(8) - B21B 1/02, 15/00 (2014.01)
USPC - 72/41, 43, 200, 206, 370.12, 403, 407; 164/418, 429

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched
CPC - B21B 2263/20 (2014.01)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

<table>
<thead>
<tr>
<th>Category*</th>
<th>Citation of document, with indication, where appropriate, of the relevant passages</th>
<th>Relevant to claim No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Y</td>
<td>US 4,538,546 A (BARON) 03 September 1985 (03.09.1985) entire document</td>
<td>2, 3</td>
</tr>
<tr>
<td>A</td>
<td>US 4,344,309 A (MATSUZAKI) 17 August 1982 (17.08.1982) entire document</td>
<td>1-7</td>
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Date of the actual completion of the international search: 17 January 2014

Date of mailing of the international search report: 07 FEB 2014

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