Title (en)
  Method of rolling a metal product

Title (de)
  Verfahren zum Walzen eines Metallproduktes

Title (fr)
  Procédé de laminage d'un produit métallique

Publication
  EP 0988903 B1 20030502 (FR)

Application
  EP 99402297 A 19990920

Priority
  FR 9811761 A 19980921

Abstract (en)
  [origin: EP0988903A1] The process involves rolling a metal product in at least one rolling cage (1) associated with a calculation unit (4) comprising a calculator and a mathematical model for regulating the rolling force applied by the tightening apparatus (17). The installation used to implement the process comprises: (a) a rolling cage having two spaced columns (11); (b) at least two superposed working rolls (12, 12') between the columns of the cage; (c) device for control of feed of the product (2) for rolling in a rolling nip (22) delimited by two arcs of contact (20, 20') of the product (2) with the two rolls, between an inlet and an outlet section of the rolling nip (22); tightening apparatus (17) for applying pressure on the rolls and the cage to regulate the gap between the working rolls (12, 12') corresponding to a desired reduction in thickness and to maintain the gap during the rolling pass by applying between the working rolls (12, 12') a rolling force that depends on the mechanical and physical characteristics of the cage and the product and the conditions of passage of the metal in the rolling nip, and determines a yielding effect for different elements of the cage tending to augment the gap; and (d) devices (31, 32) controlled by a calculation unit (4) comprising a calculator (40) associated with a mathematical model, to regulate the tightening apparatus. Before each pass the calculation unit (4) associated with the mathematical model (40) determines a predictable value of the contraction stress of the metal corresponding to the deformation to be realized in the considered pass by taking into account during rolling the microcrystalline structure of the metal constituting the rolling product (2). The rolling force to be applied in order to obtain the desired thickness reduction is calculated before each pass as a function of the predictable value of the contraction stress and its development during rolling.

IPC 1-7
  B21B 37/58

IPC 8 full level
  B21B 37/00 (2006.01); **B21B 37/58** (2006.01)

CPC (source: EP US)
  B21B 37/58 (2013.01 - EP US)

Cited by
  US7031797B2

Designated contracting state (EPC)
  AT BE CH CY DE DK ES FI FR GB GR IE IT LI LU MC NL PT SE

DOCDB simple family (publication)
  EP 0988903 A1 20000329; **EP 0988903 B1 20030502**; AT E238852 T1 20030515; DE 69907354 D1 20030605; DE 69907354 T2 20040401; ES 2193673 T3 20031101; FR 2783444 A1 20000324; FR 2783444 B1 20001215; JP 2000317511 A 20001121; US 6526328 B1 20030225

DOCDB simple family (application)
  EP 99402297 A 19990920; AT 99402297 T 19990920; DE 69907354 T 19990920; ES 99402297 T 19990920; FR 9811761 A 19980921; JP 30593099 A 19990921; US 39917099 A 19990920