

Title (en)
Device for hardening rails

Title (de)
Einrichtung zum Härten von Schienen

Title (fr)
Dispositif de durcissement de rails

Publication
EP 2243565 B1 20120321 (DE)

Application
EP 10450110 A 20090127

Priority
• EP 09450016 A 20090127
• AT 1752008 A 20080204

Abstract (en)
[origin: CA2652329A1] The invention relates to a device for hardening of rails, in particular profiled track rails, each optionally having a different cross-sectional shape and a length of more than 50 meters, by cooling at least a portion of the respective rail cross section over the entire length of the rail in a coolant, comprising transverse shunting means in the area of a roller gear, straightening means and manipulation grippers for conveying the rail in the device, at least one positioning means, each with a basin and/or trough with coolant and cooling bed. To create a device with which high quality rails can be manufactured economically with a high throughput and with a great reliability, it is proposed according to the present invention that the manipulation gripper should be formed from a plurality of identically shaped aligned tongs (30) that can be operated to have the same movement, each having gripper arms (31, 31') which are shaped with centering parts (312, 312') for an axial alignment of the head (12) of the rail and with gripper parts (311, 311') for a cross-sectionally aligned holding of the rail base, and a precision introduction of the rail (1) into the positioning means (4) and securing of same therein are made possible and/or the positioning means (4) has a plurality of holding components (40) aligned horizontally with supporting rigs (41) for the base (11) of a rail (1) introduced in a hanging position, said base (11) being securable on the supporting rigs (41) by releasable chucking elements (42) and/or hold-down devices so that it is secured from distortion in the axial rail (1) and/or at least basins (5) are arranged horizontally at the same height side-by-side so they are axially parallel with positioning means (4), and the part of the coolant (50) that can be used for rail hardening in the basin (5) has a depth which exceeds the height of the largest rail profile by at least 10% and/or the basin (5) and the supporting rigs (41) and the releasable chucking means (42) for the base (11) of the hanging rail (1) of all the components of the positioning means (4) can be moved in a controlled manner relative to one another vertically at the same time for introducing the rail into the coolant, and a respective vertical holding position and duration of same are adjustable.

IPC 8 full level
B21B 43/00 (2006.01); **B21B 43/06** (2006.01); **C21D 1/63** (2006.01); **C21D 9/06** (2006.01)

CPC (source: EP KR US)
B21B 43/003 (2013.01 - EP US); **B21B 43/06** (2013.01 - EP US); **C21D 1/18** (2013.01 - KR); **C21D 1/63** (2013.01 - EP US); **C21D 9/0018** (2013.01 - EP US); **C21D 9/04** (2013.01 - EP KR US); **B21B 1/085** (2013.01 - EP US); **B21B 43/00** (2013.01 - EP US); **B21B 43/006** (2013.01 - EP US); **B21B 45/023** (2013.01 - EP US)

Cited by
CN103736981A

Designated contracting state (EPC)
AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HR HU IE IS IT LI LT LU LV MC MK MT NL NO PL PT RO SE SI SK TR

DOCDB simple family (publication)
AT 505930 A4 20090515; AT 505930 B1 20090515; AT E550112 T1 20120415; AT E550113 T1 20120415; AT E554867 T1 20120515; AU 2009200367 A1 20090820; AU 2009200367 B2 20110331; AU 2011200883 A1 20110324; AU 2011200883 B2 20141204; AU 2011200892 A1 20110324; AU 2011200892 B2 20140612; AU 2011200893 A1 20110324; AU 2015203117 A1 20150709; AU 2015203117 B2 20170608; BR 122019018872 B1 20201124; BR 122019018876 B1 20201124; BR 122019018877 B1 20201124; BR P10900474 A2 20091110; BR P10900474 B1 20200211; CA 2652329 A1 20090804; CA 2652329 C 20120327; CA 2742873 A1 20090804; CA 2742873 C 20130402; CA 2742939 A1 20090804; CA 2742939 C 20130402; CA 2742949 A1 20090804; CA 2742949 C 20130402; CN 101509060 A 20090819; CN 101509060 B 20110420; CN 102010968 A 20110413; CN 102010968 B 20131106; CN 102010969 A 20110413; CN 102010969 B 20220603; CN 102010970 A 20110413; CN 102010970 B 20130403; DK 2085160 T3 20120730; DK 2241384 T3 20120709; DK 2243565 T3 20120709; DK 2243566 T3 20120924; EP 2085160 A1 20090805; EP 2085160 B1 20120425; EP 2241384 A1 20101020; EP 2241384 B1 20120321; EP 2243565 A1 20101027; EP 2243565 B1 20120321; EP 2243566 A1 20101027; EP 2243566 B1 20120627; ES 2382728 T3 20120612; ES 2384441 T3 20120704; ES 2385182 T3 20120719; ES 2386877 T3 20120904; HR P20120492 T1 20120731; HR P20120493 T1 20120731; HR P20120590 T1 20120831; HR P20120750 T1 20121031; JP 2009185385 A 20090820; JP 2012183589 A 20120927; JP 2012184510 A 20120927; JP 2012193455 A 20121011; JP 5163987 B2 20130313; JP 5551734 B2 20140716; JP 5551735 B2 20140716; JP 5551736 B2 20140716; KR 101221567 B1 20130114; KR 20090085544 A 20090807; PL 2085160 T3 20120928; PL 2241384 T3 20120831; PL 2243565 T3 20120831; PL 2243566 T3 20121130; PT 2085160 E 20120621; PT 2241384 E 20120416; PT 2243565 E 20120507; PT 2243566 E 20121002; RU 2388834 C1 20100510; SI 2085160 T1 20120731; SI 2241384 T1 20120531; SI 2243565 T1 20120629; SI 2243566 T1 20121030; TW 200946689 A 20091116; UA 92954 C2 20101227; US 2009200713 A1 20090813; US 2012168043 A1 20120705; US 8226883 B2 20120724; US 8557172 B2 20131015

DOCDB simple family (application)
AT 1752008 A 20080204; AT 09450016 T 20090127; AT 10450109 T 20090127; AT 10450110 T 20090127; AU 2009200367 A 20090202; AU 2011200883 A 20110301; AU 2011200892 A 20110301; AU 2011200893 A 20110301; AU 2015203117 A 20150611; BR 122019018872 A 20090204; BR 122019018876 A 20090204; BR 122019018877 A 20090204; BR P10900474 A 20090204; CA 2652329 A 20090204; CA 2742873 A 20090204; CA 2742939 A 20090204; CA 2742949 A 20090204; CN 200910130734 A 20090204; CN 201010531208 A 20090204; CN 201010531217 A 20090204; CN 201010531221 A 20090204; DK 09450016 T 20090127; DK 10450109 T 20090127; DK 10450110 T 20090127; DK 10450111 T 20090127; EP 09450016 A 20090127; EP 10450109 A 20090127; EP 10450110 A 20090127; EP 10450111 A 20090127; ES 09450016 T 20090127; ES 10450109 T 20090127; ES 10450110 T 20090127; ES 10450111 T 20090127; HR P20120492 T 20120612; HR P20120493 T 20120612; HR P20120590 T 20120713; HR P20120750 T 20120920; JP 2009044817 A 20090204; JP 2012126505 A 20120517; JP 2012126506 A 20120517; JP 2012126507 A 20120517; KR 20090008843 A 20090204; PL 09450016 T 20090127; PL 10450109 T 20090127; PL 10450110 T 20090127; PL 10450111 T 20090127; PT 09450016 T 20090127; PT 10450109 T 20090127; PT 10450110 T 20090127; PT 10450111 T 20090127; RU 2009103537 A 20090203;

SI 200930214 T 20090127; SI 200930242 T 20090127; SI 200930265 T 20090127; SI 200930320 T 20090127; TW 98103436 A 20090204;
UA A200900814 A 20090204; US 201213415233 A 20120308; US 36487709 A 20090203