Title (en)
Calender for treating a paper web

Title (de)
Kalander zur Behandlung einer Papierbahn

Title (fr)
Calandre pour le traitement d'une bande de papier

Publication
EP 0945546 B1 20021106 (DE)

Application
EP 99105649 A 19990319

Priority
DE 19813640 A 19980327

Abstract (en)
[origin: EP0945546A2] At least one roller (6-9) forming the double soft nip pair (19-21) is heated. Preferred features: At least one of the two nips has a heated roller. Surfaces (22) forming the nip are smooth, with a mean roughness (Ra), of up to 0.5 mu m under operational conditions. Rollers comprise a hard core (11) and resilient surface layer (10) having a predetermined, high thermal conductivity. This layer is very thin, being less than 4 mm, and especially 0.02-2 mm thick. It is a plastic, applied as a coating. One roller (7) forming the double nip has an overcoat (13) of metal, ceramic or plastic on the surface layer. All central rollers have a resilient surface and are of the same construction.

IPC 1-7 (main, further and additional classification)
D21G 1/00; D21G 1/02

IPC 8 full level (invention and additional information)
D21G 1/00 (2006.01)

CPC (invention and additional information)
D21G 1/00 (2013.01)

Cited by
EP2194187A1; EP2314764A1; EP2325387A3; AT505347B1; DE102008044369A1

Designated contracting state (EPC)
AT DE FI FR GB SE

EPO simple patent family
EP 0945546 A2 19990929; EP 0945546 A3 20000223; EP 0945546 B1 20021106; AT 227374 T 20021115; CA 2267030 A1 19990927; CA 2267030 C 20040127; DE 19813640 A1 19990930; US 6230615 B1 20010515

INPADOC legal status

2014-01-31 [PG25 DE] LAPSED IN A CONTRACTING STATE ANNOUNCED VIA POSTGRANT INFORM. FROM NAT. OFFICE TO EPO
- Ref Country Code : DE
- Free text : LAPSE BECAUSE OF NON-PAYMENT OF DUE FEES
- Effective date : 20131001

2014-01-31 [PG25 AT] LAPSED IN A CONTRACTING STATE ANNOUNCED VIA POSTGRANT INFORM. FROM NAT. OFFICE TO EPO
- Ref Country Code : AT
- Free text : LAPSE BECAUSE OF NON-PAYMENT OF DUE FEES
- Effective date : 20130319

2014-01-23 [REG DE R119] APPLICATION DEEMED WITHDRAWN, OR IP RIGHT LAPSED, DUE TO NON-PAYMENT OF RENEWAL FEE
- Document : DE 59903283
- Effective date : 20131001

2013-11-15 [REG AT MM01] LAPSE BECAUSE OF NOT PAYING ANNUAL FEES
- Document : AT 227374 T
- Effective date : 20130319

2013-10-31 [PG25 FI] LAPSED IN A CONTRACTING STATE ANNOUNCED VIA POSTGRANT INFORM. FROM NAT. OFFICE TO EPO
- Ref Country Code : FI
- Free text : LAPSE BECAUSE OF NON-PAYMENT OF DUE FEES
- Effective date : 20130319

2013-05-28 [REG DE R082] CHANGE OF REPRESENTATIVE
- Document : DE 59903283

2013-03-29 [PGFP AT] POSTGRANT: ANNUAL FEES PAID TO NATIONAL OFFICE
- Ref Country Code : AT
- Payment date : 20120313
- Year of fee payment : 14

2012-06-29 [PGFP FI] POSTGRANT: ANNUAL FEES PAID TO NATIONAL OFFICE

- Ref Country Code : FI
- Payment date : 20120313
- Year of fee payment : 14

2012-05-31 [PGFP DE] POSTGRANT: ANNUAL FEES PAID TO NATIONAL OFFICE
- Ref Country Code : DE
- Payment date : 20120323
- Year of fee payment : 14

2008-01-31 [PG25 FR] LAPSED IN A CONTRACTING STATE ANNOUNCED VIA POSTGRANT INFORM. FROM NAT. OFFICE TO EPO
- Ref Country Code : FR
- Free text : LAPSE BECAUSE OF NON-PAYMENT OF DUE FEES
- Effective date : 20060331

2007-01-26 [REG FR ST] NOTIFICATION OF LAPSE
- Effective date : 20061130

2006-11-29 [GBPC] GB: EUROPEAN PATENT CEASED THROUGH NON-PAYMENT OF RENEWAL FEE
- Effective date : 20060319

2006-11-21 [EUG] SE: EUROPEAN PATENT HAS LAPSED

2006-03-20 [PG25 SE] LAPSED IN A CONTRACTING STATE ANNOUNCED VIA POSTGRANT INFORM. FROM NAT. OFFICE TO EPO
- Ref Country Code : SE
- Free text : LAPSE BECAUSE OF NON-PAYMENT OF DUE FEES
- Effective date : 20060320

2006-03-19 [PG25 GB] LAPSED IN A CONTRACTING STATE ANNOUNCED VIA POSTGRANT INFORM. FROM NAT. OFFICE TO EPO
- Ref Country Code : GB
- Free text : LAPSE BECAUSE OF NON-PAYMENT OF DUE FEES
- Effective date : 20060319

2005-03-11 [PGFP FR] POSTGRANT: ANNUAL FEES PAID TO NATIONAL OFFICE
- Ref Country Code : FR
- Payment date : 20050311
- Year of fee payment : 7

2005-03-10 [PGFP SE] POSTGRANT: ANNUAL FEES PAID TO NATIONAL OFFICE
- Ref Country Code : SE
- Payment date : 20050310
- Year of fee payment : 7

2005-03-07 [PGFP GB] POSTGRANT: ANNUAL FEES PAID TO NATIONAL OFFICE
- Ref Country Code : GB
- Payment date : 20050307
- Year of fee payment : 7

2003-10-29 [26N] NO OPPOSITION FILED
- Effective date : 20030807

2003-05-16 [ET] FR: TRANSLATION FILED

2003-03-12 [GBT] GB: TRANSLATION OF EP PATENT FILED (GB SECTION 77(6)(A)/1977)
- Effective date : 20030214

2002-12-12 [REF] CORRESPONDS TO:
- Document : DE 59903283 20021212

2002-11-06 [AK] DESIGNATED CONTRACTING STATES:
- Kind Code of Ref Document : B1
- Designated State(s) : AT DE FI FR GB SE

2002-11-06 [REG GB FG4D] EUROPEAN PATENT GRANTED
- Free text : NOT ENGLISH

2002-11-06 [REF] CORRESPONDS TO:
- Document : AT 227374 T 20021115

2002-04-03 [RTI1] TITLE (CORRECTION)
- Free text : CALENDER FOR TREATING A PAPER WEB

2001-11-28 [17Q] FIRST EXAMINATION REPORT

- Effective date : 20011012

2000-12-13 [RAP1] TRANSFER OF RIGHTS OF AN APPLICATION
- Owner name : VOITH PAPER PATENT GMBH

2000-11-02 [AKX] PAYMENT OF DESIGNATION FEES
- Free text : AT DE FI FR GB SE

2000-04-19 [17P] REQUEST FOR EXAMINATION FILED
- Effective date : 20000210

2000-02-23 [AK] DESIGNATED CONTRACTING STATES:
- Kind Code of Ref Document : A3
- Designated State(s) : AT BE CH CY DE DK ES FI FR GB GR IE IT LI LU MC NL PT SE

2000-02-23 [AX] REQUEST FOR EXTENSION OF THE EUROPEAN PATENT TO:
- Free text : AL;LT;LV;MK;RO;SI

2000-02-23 [RIC1] CLASSIFICATION (CORRECTION)
- Free text : 7D 21G 1/00 A, 7D 21G 1/02 B

1999-09-29 [AK] DESIGNATED CONTRACTING STATES:
- Kind Code of Ref Document : A2
- Designated State(s) : AT DE FI FR GB SE

1999-09-29 [AX] REQUEST FOR EXTENSION OF THE EUROPEAN PATENT TO:
- Free text : AL;LT;LV;MK;RO;SI