

Title (en)

Method and device for calendering a web

Title (de)

Verfahren und Vorrichtung zum Kalandern einer Materialbahn

Title (fr)

Procédé et dispositif de calandrage d'une bande

Publication

**EP 1199404 B2 20111214 (DE)**

Application

**EP 01124969 A 20011019**

Priority

DE 10052187 A 20001020

Abstract (en)

[origin: EP1199404A2] To polish the surface of a fiber web (12), especially of paper or cardboard, at least one calender (10) is used with roller nips (14) to give the polishing action. On the path of the web through the calender, a number of spaced wetting units (20) are deployed along the direction (L) of web travel to restore the web moisture level. To polish a paper/cardboard web with a calender, the web is wetted before or after at least part of the nips, in the direction of travel, and preferably after passing through each roller nip. The wetting units deliver only sufficient water to the web to replace losses through evaporation at each nip. The web wetting action is at least partially by applying a film, at least at one wetting point, or by a spray or jet wetting unit, to deliver water droplets  $\leq 30 \mu\text{m}$  and preferably in a size range of 1-30  $\mu\text{m}$ . The water jet is a single type, or a double type to spray a fluid/air mixture e.g. using a solution. The wetting action can be supported by an electrostatic charge at the web, or the web is wetted without a charge. The lost water can be replaced at least partially by a scraper assembly. The water volume used to replace losses at the web surface is set at each wetting point as 0.1-5.0 wt.%. The moisture replacement, additional wetting and heating take into account the effect of any steam unit (18). At least one moisture replacement point is located where the web emerges from each roller nip, and directly at the nip outlet. At least one moisture replacement unit is at a guide roller (16) of the calender assembly. The gap between a moisture replacement unit and the next roller nip is set according to the type of moisture replacement, the consistency of the web movement speed and/or an aid to support moisture penetration e.g. by an electrostatic charge. The gap between the moisture replacement unit and the preceding nip is smaller than or equal to the gap between it and the next roller nip. The initial moisture content of the web is corrected on entry into the calender, so that the dry content matches the final dry content after calendering. At least one moisture replacement unit and/or a steam unit is structured to set the web lateral profile. The web guide roller can act as a pole for an electrostatic charge, to support the effect of a part of the moisture replacement units at the guide rollers. At least one additional guide roller can be used as an earth pole for the electrostatic charge. In front of the calender, a moisture replacement unit acts on the web, together with an electrostatic charge, using single- and/or double-jets. An Independent claim is included for a calender with a number of roller nips to polish the surface(s) of the paper/cardboard web, and moisture replacement units to restore the web moisture content at the nips. Preferred Features: The calender rollers are in a stack on the vertical or at an angle to the vertical. The calender can be divided into a number of roller stacks, with the moisture replacement units between the stacks. The calender can also be a horizontal stack of rollers.

IPC 8 full level

**D07B 1/16** (2006.01); **D21G 1/00** (2006.01); **D21G 7/00** (2006.01)

CPC (source: EP)

**D21G 1/0093** (2013.01); **D21G 7/00** (2013.01)

Citation (opposition)

Opponent :

- EP 0957202 B1 20040331 - V I B SYSTEMS GMBH [DE]
- US 2214641 A 19400910 - MASSEY PETER J, et al
- EP 0618328 B1 19961211 - VIB APPARATEBAU GMBH [DE]
- DE 3542342 A1 19860605 - WAERTSILAE OY AB [FI]
- ANONYM: "Die neuen Superkalander Konzepte", SULZER PAPERTEC, PAPER FINISHING, 1994, pages 16 - 17

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