

Title (en)  
Soft roll and process for making such a roll

Title (de)  
Elastische Walze und Verfahren zum Herstellen einer solchen

Title (fr)  
Rouleau élastique et procédé pour la fabrication d' un tel rouleau

Publication  
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Application  
**EP 00105584 A 20000316**

Priority  
DE 19919569 A 19990429

Abstract (en)  
The calender roller, to polish the surface of a paper web, has a hard metal core (1) and an elastic outer cladding (2). The cladding (2) is composed of a matrix material (3) with filling materials (6,7) at least partially of longitudinally-drawn and especially rod-shaped particles (6), with a length which is less than the radial thickness of the elastic cladding (2). The particles have a length:thickness ratio of 20:1 to 5:1 and especially 15:1 to 7:1 and pref. 10:1 and/or they are in a statistical distribution radially and/or axially in the matrix material (3). The majority of the particles (6) are on a radial alignment in the matrix (3) or they are in a statistical alignment distribution. The particles (6) are of a heat conductive mate with a thermal conductivity which is higher than the material of the matrix (3) and/or part of the particles (6) extend radially inwards to the surface (9) of the metal core (1) and/or the particles (6) have a thermal expansion coefficient which is lower th the matrix (3). The particles (6) are stiffer than the matrix material (3) and/or part of the particles (6) extends radially outwards to the outer surface (8) of the elastic cladding (2) and/or the particles (6) have an average length of 200-600  $\mu\text{m}$  an especially 300-500  $\mu\text{m}$  and pref. 400  $\mu\text{m}$  and/or the particles (6) are of wollastonite and/or calcium silicate. Fibers (4) of g and/or carbon are embedded in the matrix (3), in addition to the particles (6), in a fiber layer (5) or in radially successive f layers spaced apart or against each other. The elastic cladding (2) contains 5-100 fiber layers (5), and especially 20-70 layers pref. 30-40 layers and/or the particles are between the separate fiber layers (5). The cladding has an outer functional layer an inner bonding layer, to bond it to the roller core. The particles are mainly in the functional layer. The matrix material (3) is heat-setting or thermoplastic and/or is a combined resin/hardener. An Independent claim is included for the prodn. of a cladde roller where the elastic matrix material is augmented by longitudinally drawn and especially rod-shaped particles, with a shorte length than the radial thickness of the cladding. Fibers are also added to the matrix material. Preferred Features: To produce t cladding layer, at least one bundle of a number of fibers is wound round the roller core in a number of overlaid layers. The particles are added between the wound fiber layers and/or between the fiber layer and the roller core surface and/or between the fiber layer and the outer cladding surface. The fiber bundle is formed by one or more fiber rovings and/or a fiber web. The rovi is composed of a number of adjacent fibers of the same type and/or the fiber bundle is formed by a web. Before winding, the fibe bundle is coated with a matrix material, especially through a bath which contains the particles in the bath, and the saturated bundle is wound round the core. Or the fiber bundle is dry, on winding round the roller core, and is treated with the matrix material during or after winding so that the fibers are wholly embedded in the matrix.

Abstract (de)  
Es wird eine Walze, insbesondere zum Glätten von Papierbahnen, beschrieben, wobei die Walze einen insbesondere aus Metall bestehenden harten Walzenkern (1) umfaßt, der an seiner Außenseite mit einer elastischen Bezugsschicht (2) versehen ist. Die Bezugsschicht besteht aus einem elastischen Matrixmaterial (3) und in das Matrixmaterial eingebetteten Füllstoffen (6,7). Zumindest ein Teil der Füllstoffe (6,7) ist als langgestreckte, insbesondere stäbchenförmige Teilchen (6) ausgebildet, wobei die Länge der Teilchen (6) kleiner als die radiale Dicke der elastischen Bezugsschicht (2) ist. Weiterhin wird ein Verfahren zum Herstellen einer solchen Walze beschrieben. <IMAGE>

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• [A] EP 0146342 A2 19850626 - KERN RUBBER [US]  
• [A] US 5142759 A 19920901 - BONANDER JAMES [US], et al  
• [A] US 3395636 A 19680806 - HESS RALPH A

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