

Search query (2): [SP]: background of the invention [0001] 1. field of the invention[0002] this invention relates to an embossing roller including an inner hollow chamber to which a vacuum can be applied, and a wall which surrounds the hollow chamber and which has a structured surface that includes raised areas and recesses and pores that communicate with the inner hollow chamber.[0003] 2. discussion of related art[0004] embossing rollers of this type are known and are used, for example, in connection with the production of structured substrates such as imitation leather that have a surface that feels like the natural grain of leather. during or after their production, the substrates are guided over the surface of the embossing roller and with the vacuum that can be applied to the inner hollow chamber of the roller, which vacuum acts on the substrate via the pores, are drawn or sucked against the structured surface, whereupon the structured surface of the embossing roller is transferred in the reversal process to the surface of the substrate in which it is in contact.[0005] consequently, if the structured surface of the embossing roller forms, for example, a negative image of a leather grain, with corresponding raised areas and recesses, then this produces the exact reverse of this structured surface on the surface of the substrate, such as at the points in which the embossing roller has a raised area, a corresponding recess is produced in the substrate and vice versa. this method is therefore frequently also referred to as the vacuum or negative pressure embossing method.[0006] the embossing rollers used for the above-described method can, for example, be made of metallic materials, and it is possible to produce the characteristic surface structure, such as with material-removing methods or by etching and the like. this is very complex and cost-intensive, and the pores that are required for transmitting the vacuum to the substrate must be mechanically produced in the wall in a labor-intensive fashion.[0007] u.s. pat. no. 3,072,961 describes an embossing roller with a hollow chamber, a fibrous material mounted on it with an adhesive, which carries the embossing pattern, and an impregnation based on a filler-containing epoxy resin that is applied to the surface of the material. in this prior art as well, holes must be mechanically produced in the wall in a labor-intensive fashion. summary of the invention [0008] one object of this invention is to provide an embodiment of an embossing roller which should be efficient and economical to produce.[0009] in order to attain the stated and other objects, this invention embodies an embossing roller according to the features of embodiments and modifications of this invention as described in this specification and in the claims.[0010] one proposal according to this invention includes a wall of the embossing roller according to this invention including a plurality of discrete and successive layers one after the other from the hollow chamber in the direction toward the surface and the individual layers are made on the basis of epoxy-resin mixtures filled with fillers.[0011] the multilayered embodiment of the wall proposed according to this invention, with epoxy-resin mixtures filled with fillers, makes it possible with a low consumption of raw materials, to form a wall that is sufficient to meet the mechanical demands of such an embossing roller, in whose outermost layer closest to the surface, such as the one that forms the surface of the embossing roller, the desired surface structure can be directly produced, such as by being formed during its manufacture.[0012] furthermore, the wall of the embossing roller thus produced automatically has pores that permit the vacuum to be transmitted from the hollow chamber to a substrate lying in the vicinity of or near the surface of the embossing roller. the effect that results in this pore formation is not fully explained, but it is believed that within the individual layers at the grain boundaries between the individual filler particles and the epoxy resin, capillaries and extremely small cavities form, which communicate with one another and together, form the pores.[0013] for example, as the outermost layer is being formed out of the epoxy resin compound provided with fillers, it is possible to mold the surface structure through contact with a corresponding matrix.[0014] it is also possible to produce the embossing roller according to this invention using the so-called centrifugal casting method in which a rotationally symmetrical permanent mold, whose inside has the surface structure to be molded, is set into rotation about its central axis and the filler-containing epoxy resin compound provided to form the layers according to this invention is placed against the wall of the permanent mold using an appropriate temperature level, causing the layers to form and also causing the outermost layer in the region of its surface to be molded with the negative of the surface structure of the permanent mold that is to be molded into it.[0015] it is clear that thus forming an embossing roller in this way can occur in a particularly efficient way.[0016] the surface structure to be produced by the embossing roller can, for example, be provided in the form of a metallic layer such as steel, a suitably temperature-resistant plastic layer such as silicone or fluorine-based plastic, or a natural layer such as a leather layer. in the case of the centrifugal casting method described above, the inner surface of the permanent mold is lined with this layer.[0017] according to one embodiment of this invention, the outermost layer closest to the surface constitutes or forms the structured surface and has the raised areas and recesses, while the layers farther from the surface have respectively constant layer thicknesses.[0018] the embossing roller embodied according to this invention is preferably rotationally symmetrical and cylindrically embodied, but can also have a slight convexity or concavity that deviates from the cylindrical form.[0019] according to another embodiment of this invention, the layers each have a ratio of the epoxy resin mixture to the fillers of 1:15 to 2:1, preferably 1:10 to 1:1. the ratios can be selected by the person skilled in the art as a function of the desired properties of the layers. for example, in order to achieve higher mechanical strengths and higher wear resistance, a correspondingly higher filler content is selected.[0020] according to one embodiment of this invention, the fillers of the layers of the embossing roller according to this invention are selected from the group including metal/nonmetal nitrides, -oxides, and/or -carbides. they can, for example, include silica sand, silicon carbide, aluminum oxide, boron nitride, and/or iron oxide(s), and carbon compounds such as graphite and diamond, as well as small percentages of metal powders such as copper, silver, or gold.[0021] in addition, the fillers of the outermost layer closest to the surface can also include sodium chloride, sodium acetates, and/or potassium acetates and the fillers of the layer adjacent to the outermost layer closest to the surface can also include salts such as sodium chloride.[0022] the fillers used are characterized by a good thermal conductivity, high hardness, and chemical resistance and promote the formation of capillaries and cavities that are essential for the use of the embossing roller in the vacuum embossing method.[0023] in this case, the material that is to be embossed is usually brought to its softening temperature, guided across the embossing roller, and with the applied vacuum, pressed against the embossing surface, such as the layer closest to the surface. due to the high thermal conductivity of the embossing roller that is promoted by the fillers, the structure is then frozen in that the film in the deformed state is cooled to below its softening temperature while it is resting on the embossing roller, such as the heat dissipation is carried out by the embossing roller according to this invention.[0024] according to another embodiment of this invention, the fillers have a particle diameter of from 0.5 to 1000 micro m.[0025] in one embodiment of the embossing roller according to this invention, it has three other layers starting from an outermost layer closest to the surface of which the innermost layer has a higher mechanical strength than the remaining layers so that this innermost layer lends the embossing roller of this invention the required mechanical stability.[0026] naturally, the person skilled in the art can also embody the number of the layers differently if needs correspondingly dictate otherwise, such as it can be embodied with more or less than the four layers mentioned above.[0027] this invention also relates to a method for producing an embossing roller of this type.[0028] according to this invention, the embossing roller is produced by a sequence of the following steps: preparation of a rotationally symmetrical permanent mold, whose inside has the surface structure to be molded preparation of a powdered fraction for forming the layer closest to the surface and introduction thereof into the permanent mold setting of the permanent mold into rotation about its central axis and heating thereof to a temperature suitable for layer formation formation of the layer closest to the surface and molding of the to-be-molded surface structure of the permanent mold in the region of its surface and preparation of the powdered fractions for forming the other layers and introduction thereof into the permanent mold provided with the layer closest to the surface and successive repetition of the third mentioned

Results: 11

Search history

Search PN=(WO2015055667) (Results 1)

1:

Search [SP]: background of the invention [0001] 1. field of the invention[0002] this invention relates to an embossing roller including an inner hollow chamber to which a vacuum can be applied, and a wall which surrounds the hollow chamber and which has a structured surface that includes raised areas and recesses and pores that communicate with the inner hollow chamber.[0003] 2. discussion of related art[0004] embossing rollers of this type are known and are used, for example, in connection with the production of structured substrates such as imitation leather that have a surface that feels like the natural grain of leather. during or after their production, the substrates are guided over the surface of the embossing roller and with the vacuum that can be applied to the inner hollow chamber of the roller, which vacuum acts on the substrate via the pores, are drawn or sucked against the structured surface, whereupon the structured surface of the embossing roller is transferred in the reversal process to the surface of the substrate in which it is in contact.[0005] consequently, if the structured surface of the embossing roller forms, for example, a negative image of a leather grain, with corresponding raised areas and recesses, then this produces the exact reverse of this structured surface on the surface of the substrate, such as at the points in which the embossing roller has a raised area, a corresponding recess is produced in the substrate and vice versa. this method is therefore frequently also referred to as the vacuum or negative pressure embossing method.[0006] the embossing rollers used for the above-described method can, for example, be made of metallic materials, and it is possible to produce the characteristic surface structure, such as with material-removing methods or by etching and the like. this is very complex and cost-intensive, and the pores that are required for transmitting the vacuum to the substrate must be mechanically produced in the wall in a labor-intensive fashion.[0007] u.s. pat. no. 3,072,961 describes an embossing roller with a hollow chamber, a fibrous material mounted on it with an adhesive, which carries the embossing pattern, and an impregnation based on a filler-containing epoxy resin that is applied to the surface of the material. in this prior art as well, holes must be mechanically produced in the wall in a labor-intensive fashion. summary of the invention [0008] one object of this invention is to provide an embodiment of an embossing roller which should be efficient and economical to produce.[0009] in order to attain the stated and other objects, this invention embodies an embossing roller according to the features of embodiments and modifications of this invention as described in this specification and in the claims.[0010] one proposal according to this invention includes a wall of the embossing roller according to this invention including a plurality of discrete and successive layers one after the other from the hollow chamber in the direction toward the surface and the individual layers are made on the basis of epoxy-resin mixtures filled with fillers.[0011] the multilayered embodiment of the wall proposed according to this invention, with epoxy-resin mixtures filled with fillers, makes it possible with a low consumption of raw materials, to form a wall that is sufficient to meet the mechanical demands of such an embossing roller, in whose

outermost layer closest to the surface, such as the one that forms the surface of the embossing roller, the desired surface structure can be directly produced, such as by being formed during its manufacture.[0012] furthermore, the wall of the embossing roller thus produced automatically has pores that permit the vacuum to be transmitted from the hollow chamber to a substrate lying in the vicinity of or near the surface of the embossing roller. the effect that results in this pore formation is not fully explained, but it is believed that within the individual layers at the grain boundaries between the individual filler particles and the epoxy resin, capillaries and extremely small cavities form, which communicate with one another and together, form the pores.[0013] for example, as the outermost layer is being formed out of the epoxy resin compound provided with fillers, it is possible to mold the surface structure through contact with a corresponding matrix. [0014] it is also possible to produce the embossing roller according to this invention using the so-called centrifugal casting method in which a rotationally symmetrical permanent mold, whose inside has the surface structure to be molded, is set into rotation about its central axis and the filler-containing epoxy resin compound provided to form the layers according to this invention is placed against the wall of the permanent mold using an appropriate temperature level, causing the layers to form and also causing the outermost layer in the region of its surface to be molded with the negative of the surface structure of the permanent mold that is to be molded into it.[0015] it is clear that thus forming an embossing roller in this way can occur in a particularly efficient way.[0016] the surface structure to be produced by the embossing roller can, for example, be provided in the form of a metallic layer such as steel, a suitably temperature-resistant plastic layer such as silicone or fluorine-based plastic, or a natural layer such as a leather layer. in the case of the centrifugal casting method described above, the inner surface of the permanent mold is lined with this layer.[0017] according to one embodiment of this invention, the outermost layer closest to the surface constitutes or forms the structured surface and has the raised areas and recesses, while the layers farther from the surface have respectively constant layer thicknesses.[0018] the embossing roller embodied according to this invention is preferably rotationally symmetrical and cylindrically embodied, but can also have a slight convexity or conicity that deviates from the cylindrical form.[0019] according to another embodiment of this invention, the layers each have a ratio of the epoxy resin mixture to the fillers of 1:15 to 2:1, preferably 1:10 to 1:1. the ratios can be selected by the person skilled in the art as a function of the desired properties of the layers. for example, in order to achieve higher mechanical strengths and higher wear resistance, a correspondingly higher filler content is selected.[0020] according to one embodiment of this invention, the fillers of the layers of the embossing roller according to this invention are selected from the group including metal/nonmetal nitrides, -oxides, and/or -carbides. they can, for example, include silica sand, silicon carbide, aluminum oxide, boron nitride, and/or iron oxide(s), and carbon compounds such as graphite and diamond, as well as small percentages of metal powders such as copper, silver, or gold.[0021] in addition, the fillers of the outermost layer closest to the surface can also include sodium chloride, sodium acetates, and/or potassium acetates and the fillers of the layer adjacent to the outermost layer closest to the surface can also include salts such as sodium chloride.[0022] the fillers used are characterized by a good thermal conductivity, high hardness, and chemical resistance and promote the formation of capillaries and cavities that are essential for the use of the embossing roller in the vacuum embossing method.[0023] in this case, the material that is to be embossed is usually brought to its softening temperature, guided across the embossing roller, and with the applied vacuum, pressed against the embossing surface, such as the layer closest to the surface. due to the high thermal conductivity of the embossing roller that is promoted by the fillers, the structure is then frozen in that the film in the deformed state is cooled to below its softening temperature while it is resting on the embossing roller, such as the heat dissipation is carried out by the embossing roller according to this invention.[0024] according to another embodiment of this invention, the fillers have a particle diameter of from 0.5 to 1000 micro m.[0025] in one embodiment of the embossing roller according to this invention, it has three other layers starting from an outermost layer closest to the surface of which the innermost layer has a higher mechanical strength than the remaining layers so that this innermost layer lends the embossing roller of this invention the required mechanical stability.[0026] naturally, the person skilled in the art can also embody the number of the layers differently if needs correspondingly dictate otherwise, such as it can be embodied with more or less than the four layers mentioned above.[0027] this invention also relates to a method for producing an embossing roller of this type.[0028] according to this invention, the embossing roller is produced by a sequence of the following steps: preparation of a rotationally symmetrical permanent mold, whose inside has the surface structure to be molded preparation of a powdered fraction for forming the layer closest to the surface and introduction thereof into the permanent mold setting of the permanent mold into rotation about its central axis and heating thereof to a temperature suitable for layer formation formation of the layer closest to the surface and molding of the to-be-molded surface structure of the permanent mold in the region of its surface and preparation of the powdered fractions for forming the other layers and introduction thereof into the permanent mold provided with the layer closest to the surface and successive repetition of the third mentioned (Results 11)

Title: APPARATUS FOR MAKING ENGRAVING ROLLS

Abstract: Source: GB1139757A 1,139,757. Embossing surfaces. KLEINWEFERS GRAVUREN G.m.b.H. 6 May, 1966 [28 May, 1965], No. 20047/66. Heading B6C. A jacket for an embossing roller is produced from the relief surface of a laminar original by wrapping the original about an auxiliary cylinder with the relief surface facing inwards and with the edges abutting, eliminating the appearance of a seam at the edges, disposing the auxiliary cylinder and original inside a working cylinder, attaching the outer surface of the original to the inner surface of the working cylinder with adhesive, withdrawing the auxiliary cylinder and preparing by means of electrodeposition or a fluid casting material, e.g. epoxy resin, a negative relief image of the relief surface of the original, this image constituting the jacket. The jacket may be a direct negative relief image of the inner surface of the original. Alternatively a first negative relief image may be prepared from the inner surface of the original by casting, e.g. with a polysiloxane rubber, a positive relief image prepared from the negative image by casting, e.g. with an epoxy resin, and the jacket prepared from the positive image by electrodeposition or by fluid casting.

Classifications:

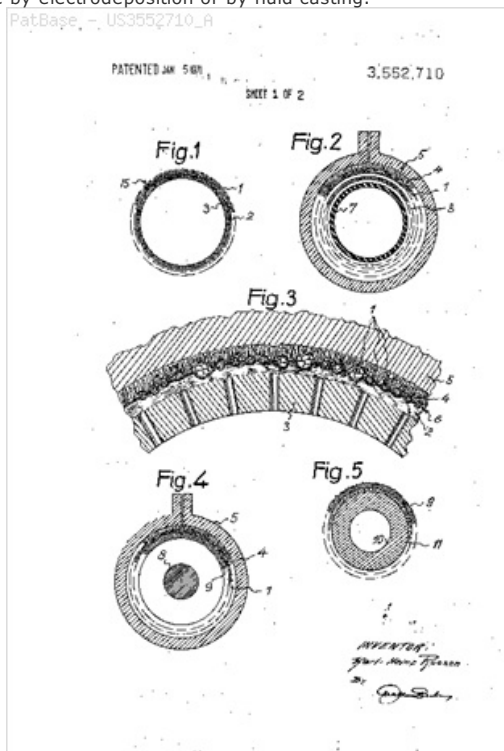
International (IPC 8-9): B29D22/00 B29D99/00 B41C1/18 B44B5/02 C25D1/00 D06C23/00 D21F3/08 (Advanced/Invention); B29D22/00 B29D99/00 B41C1/00 B44B5/00 C25D1/00 D06C23/00 D21F3/02 (Core/Invention)

International (IPC 1-7): B22D19/00 B29C1/02 B41C1/18 B44B5/02 B44C3/04 C25D1/00

CPC: Y10S425/029 B41C1/18 B29D22/00 B29D99/0035 B29K2105/06 B29L2031/324 Y10T29/4956 D21F3/08 B44B5/026 D06C23/00 D06C2700/31 C25D1/10 C25D1/02

European: B29D22/00 B29D99/00E2 B41C1/18 B44B5/02D C25D1/00 D06C23/00 D21F3/08 L29K105/06 L29L31/32B N06C700/31

US: 101/32 101/395 156/294 249/173 249/83 264/219 264/220 264/226 29/148.4 29/895.3 425/110 425/385 425/500 425/504 425/90 425/D1G.29



Family:

Publication number	Publication date	Application number	Application date
DE1241227 B	19670524	DE1965K056250	19650528
FR1479936 A	19670505	FR19660061690	19660516
GB1139757 A	19690115	GB19660020047	19660506
US3387351 A	19680611	US19660553856	19660531
US3552710 A	19710105	US19680719200	19680405

Priority:

DE1965K056250 19650528 FR19660061690 19660516 US19660553856 19660531
US19680719200 19680405

Probable Assignee: KLEINWEFERS GRAVUREN

Assignee(s): (std): KLEINWEFERS GRAVUREN ; KLEINWEFERS GRAVUREN G M B H ; KLEINWEFERS GRAVUREN GMBH

Inventor(s): (std): KARL HEINZ ROOSEN ; ROOSEN KARL HEINZ

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softening temperature while it is resting on the embossing roller, such as the heat dissipation is carried out by the embossing roller according to this invention.[0024] according to another embodiment of this invention, the fillers have a particle diameter of from 0.5 to 1000 micro m.[0025] in one embodiment of the embossing roller according to this invention, it has three other layers starting from an outermost layer closest to the surface of which the innermost layer has a higher mechanical strength than the remaining layers so that this innermost layer lends the embossing roller of this invention the required mechanical stability.[0026] naturally, the person skilled in the art can also embody the number of the layers differently if needs correspondingly dictate otherwise, such as it can be embodied with more or less than the four layers mentioned above.[0027] this invention also relates to a method for producing an embossing roller of this type.[0028] according to this invention, 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Results: 11

10) Family number: 53212578 (CN202782423U)

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Title: NOVEL EMBOSSING ROLLER

Abstract: Source: CN202782423U The utility model discloses a novel embossing roll comprising: a support shaft and the roller, the roller disposed on the support shaft, said support shaft into a hollow structure, forming a cavity, the cavity diameter gradually decreases from one end to the other end of the cavity, the support shaft is provided on an inner wall temperature detecting means, provided with closures at both ends of the support shaft. Through the above-described manner, the utility model can work in the process of embossing roll can continue to embossing roller cooling, improve product quality, simple and practical.

Classifications:

International (IPC 8-9): B44B5/00 B44B5/02 (Advanced/Invention)

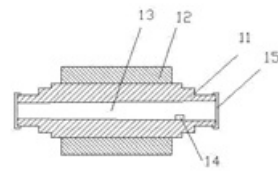


图 1

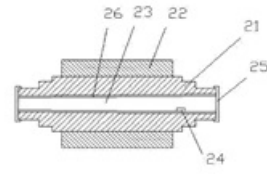


图 2

5

Family:

Publication number	Publication date	Application number	Application date
CN202782423 U	20130313	CN201220331522U	20120710

Priority:

CN201220331522U 20120710

Probable Assignee: CHANGZHOU OUYA HEAVY IND MACHINERY CO LTD**Assignee(s):** (std): CHANGZHOU OUYA HEAVY IND MACHINERY CO LTD**Assignee(s):** CHANGZHOU OUYA HEAVY IND MACHINERY CO**Inventor(s):** (std): WU JIANZHONG ; XUE CHUNYAN