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(54) **EMBOSSING MACHINE TRANSFERRING PATTERN ON WET FLOCKED FABRIC**

PRÄGEMASCHINE MIT MUSTERTRANSFER AUF NASSBEFLOCKTES GEWEBE

GRAUFFREUSE TRANSFÉRANT UN MOTIF SUR DU TISSU FLOQUÉ HUMIDE

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Description

[0001] The present invention relates to an embossing machine for forming a pattern on a flocked wet fabric, e.g. an upholstery stuff used in furniture sector, fabrics used in clothing sector and curtain fabrics as well as fabrics for packaging and for wall coatings, said machine comprising an acid-corrosion, patterned embossing steel cylinder or a patterned rubber coated embossing steel cylinder, which embossing steel cylinder forms a pattern directly on the flocked fabric, and an unpatterned straight cylinder, which is arranged beneath the embossing steel cylinder and cooperates with the patterned steel cylinder, according to the preamble of claim 1.

[0002] Correspondingly, this invention concerns an embossing method for forming a pattern on a wet flocked fabric by passing the fabric, to which a binder and, thereafter, flocks have been applied before, with free flocks having been sucked away from the flocked wet fabric, between a patterned embossing steel cylinder, namely an acid-corrosion, patterned embossing steel cylinder or a patterned rubber coated embossing steel cylinder, which forms the pattern directly on the flocked fabric, and an unpatterned straight cylinder which is arranged beneath the embossing steel cylinder and cooperates with the embossing steel cylinder.

[0003] Such an embossing technique for forming patterns on flocked wet fabrics is disclosed in GB 2 066 105 A; however, according to this document, a fabric web, after flocking, is dried in a drying station where a foam backing for the fiber flocking is at least partially dried, without significant curing thereof; thereafter, the fabric web is advanced to an embossing machine or station comprising a patterned embossing steel roller (cylinder) cooperating with a rubber counter roller which is arranged above the patterned embossing roller. Then, the web is passed through a station where an aqueous solution containing a release agent and a wetting agent is applied.

[0004] In principle, it is usual at the prior art that a heated and patterned steel cylinder is pressed on the dried fabric and thus the wished pattern is obtained on the fabric. Details of such a system are shown in Fig. 1. According to Fig. 1, a pattern is applied to a flocked fabric 1 when the flocked fabric 1 is dry (not wet or humid). More in detail, the fabric 1 is unrolled and guided to a so-called J-box (a unit for collecting the fabric 1), whereafter the fabric 1 is passed through a brush unit 3 which serves to remove foreign materials from the surface of the fabric 1. In a station 4, a hot patterned steel cylinder forms the pattern on the fabric 1 which is then cooled by cooling cylinders 5 and wound up to an end product coil 6. A significant disadvantage of such a hot embossing technique is that the end-product lacks permanence and fine general appearance. Colours and appearance of the emboss loses its look after a particular time, and the final quality deteriorates. The pattern formed by hot embossing on the flocked fabric cannot be seen clearly. After the fabric is used for a short time, colours and pattern dete-

riorate. Because the pattern is formed on the flocked and dried fabric the pattern cannot diffuse to the base of the flocked fabric and the adhesive plastered to the base. Additionally, as the embossing steel cylinder contacts the surface of the flocked fabric under high pressure and high temperature (200 °C), colour troubles are met.

[0005] Another process, namely an air embossing method, is described in WO 01/21878 A1. In this process, pressurized air passes through patterned holes in the surface of a template cylinder, and the air is blown on a flocked wet fabric. The pressurized air which passes through the perforated parts of the cylinder applies pressure on a flocked wet fabric and thus, a pattern is formed. The achieved pattern has a rough appearance. Because the pattern is formed on flocked wet fabric by air, this pattern is created by left or right deviation of flocks. According to this prior art, the flocks are not immersed into a binder plastered on the fabric, as would happen when using a cylinder.

[0006] US 5 510 143 A describes an apparatus and a method for creating a pattern on flocked fabrics where a patterned cylinder is applied to the flocked surface before the adhesive that retains the flocking has cured. The steel cylinder of this known apparatus only fleets the flocks (fibers), instead of laying them on a wet binder coated on the surface of the fabric. Thereby, it is not possible to provide a three-dimensional appearance, a net contour and dual colour to the flocked fabric, as would be desirable. Furthermore, no cleaning system is provided at this known technique; however, if the upper steel cylinder is approaching the lower straight cylinder, that is if flocks are to be laid on the binder, a continuous cleaning system would be desirable on lower and upper cylinders.

[0007] US 4,294,577 A discloses a dyed flocked fabric and a method of making the same where a heat-sublimable dye is contained as a component of the adhesive which is used to adhere flocks to a substrate fabric. According to specific embodiments, furthermore, embossing of the flocked fabric by air embossing or by means of an embossing roll, after drying the flocked fabric, is disclosed.

[0008] In DE 29 30 007 A, a method for producing a flocked web is described where, again, an embossing roll may be used to form a pattern on the flocked web which has been dried and cured before.

[0009] From US 2003/0097943 A1, a machine to simultaneously hot-press, print, flock imprint and brush is known; also this technique uses a conventional embossing device, with an engraved cylinder rotating above a counter cylinder.

[0010] Moreover, at the device of US 4 668 323 A, a straight platform is present beneath a steel cylinder which applies a pattern on calendared flocks. More in detail, the patterned steel cylinder calenders a part of flocks whereas other flocks remain, thus the pattern being formed.

[0011] A further process and product is described in GB 215 97 30 A. Here, adhesive is transferred to a fabric

which, later, passes through a flocking unit, followed by calendaring cylinders. Calendaring cylinders calendar all flocks on the surface unidirectionally. Additionally, upper and lower cylinders are smooth and no pattern is formed. Then, excess flock is removed by passing the fabric through a suction unit. Following this process, a patterning procedure is optionally applied on calendered flock.

[0012] Further documents belonging to related, but different products and techniques are GB 2 057 363 A, WO 98/18990 A, GB 1.162.360 and WO 01/21878 A1.

[0013] According to the invention, the following aims were considered when developing the embossing machine configured to form patterns on flocked wet fabrics:

- Transferring patterns by a steel cylinder applied in a hot emboss machine (cf. WO 01/21878 A) without the need of a heating process, and without the need of a high pressure environment.
- Avoiding a pre-drying process applied in a hot emboss procedure and thus the need of a pre-drying process.
- Completing all steps of the process rapidly and sequentially.
- Allowing lower machine investment cost in comparison with that of air embossing and hot embossing machines, as well as lower power cost in comparison with hot embossing machines.
- Providing ease of operation.
- Providing high efficiency.
- Avoiding air applied in air emboss machine.
- Obtaining faster operation and cost-efficiency due to patterned steel cylinder by acid-corrosion method or cylinder covered by rubber.

[0014] Additionally:

- Enabling permanent and different patterns on coloured or natural flocked fabric leaving a flocking unit in wet state, instead of flocked and dried fabric base.
- Avoiding foreign materials (flock lump, binder coagulate etc.) which may be formed during the production phase, to avoid problems with the operation of the machine according to the invention.
- Gaining dark and light colour during embossing and dying processes as flocks, pressed by the embossing steel cylinder, immersed into lower binder layer.
- Enabling clear-cut, net and three-dimensional patterns on flocked fabric.

- Increasing the possibility of new product developments in exchange for lower costs.
- Different and superior appearance and permanence of effects on pattern.
- Developing a machine which is first applied to industry in this field.

[0015] Accordingly, the present invention provides an embossing machine as defined in claim 1, as well as an embossing method as defined in claim 2.

[0016] Furthermore, the invention provides a system for producing an embossed flocked fabric comprising an embossing machine according to the invention, and further comprising washing drum units, in the case of colour flocks, upstream of the embossing machine; or dying or paper transfer painting units, in the case of natural flocks, upstream of the embossing machine.

[0017] At the present machine the lower unpatterned cylinder and the upper patterned embossing cylinder are cleaned during operation of the machine. Foreign materials (adhesive, flock lump and others) on the cylinders are scraped by a scraping blade located on the opposite side of the operating direction of the lower cylinder which passes through water and is re-cleaned by a rubber blade which is in the operating direction of lower cylinder; this process is continuous as long as the machine operates.

[0018] Further, vacuum brushes and pressure air jets are used for cleaning the upper patterned embossing cylinder. The vacuum brushes simultaneously rotate in different directions at both sides of this cylinder, and if flocked adhesive lump is stuck to patterned embossing steel cylinder, the lump is immediately removed. With each rotation of the cylinder, said flocked binder lump is prevented to form defects on the product. Moreover, air is applied on the patterned embossing steel cylinder by a pressure air jet. By this, foreign materials on the steel embossing cylinder or in hole parts of this cylinder are removed.

[0019] Thus, as long as the machine according to the present invention operates, lower and upper cylinders are continuously cleaned, and the machine is maintained available for industrial use.

[0020] Another significant difference between the machine according to the invention and the machine described in US 5 510 143 A is that A.C. (Alternative Current) flocking technique is applied at the known machine. Flocks are 15 degrees away from vertical axis (75 degrees). Contrary to this, according to the invention, D. C. (Direct Current) flocking technique maybe applied where the flocks are exactly aligned according to a vertical axis (90 degrees); this issue will be described in detail below. Additionally, with the machine according to present invention, the pattern on the upper embossing cylinder is created by acid - corrosion, or a patterned embossing cylinder may be used which is coated by rubber and patterned with the technique of laser cutting.

[0021] Further, significant differences of end-products manufactured according to the present technique, when compared to US 5 510 143 A, are as follows:

- In the machine according to present invention, the pattern on the embossing steel cylinder is directly created by acid - corrosion, and no special material is coated, or the patterned embossing cylinder is coated with rubber, where the "offset" technique can be used. In US 5 510 143 A, a different technique is applied for creating the pattern on the steel cylinder, where a special material is to be coated.
- The lower, unpatterned cylinder of the machine according to the invention, during operation, is located within water, and the surface of this cylinder is cleaned by steel and plastic blades. In the case of US 5 510 143 A any foreign material on the lower cylinder causes level difference, and the upper steel cylinder contacts the binder of the fabric.
- In the machine according to the invention, the surface of the embossing steel cylinder is continuously cleaned by vacuum brush and pressure air as long as the machine operates; contrary thereto, no cleaning is involved according to US 5 510 143 A.
- Flock absorption apparatus, which will absorb free flocks at the exit of the flocking unit and at the entrance of wet embossing machine, may be added.
- At the present process, a cylinder lays flocks onto the binder, whereas according to US 5 510 143 A, a cylinder flects flocks.
- At the present technique, a fabric flocked by different amount and type of natural or colour flocks may be processed in different washing, embossing, painting and drumming procedures and thus, significantly different new products may be obtained.

[0022] Then, it should be mentioned that a different process and product is described in US 4 668 313 A where a flocked wet product, after leaving the flocking unit, is passed through a calendaring cylinder, and all flocks on the surface of the fabric are uni-directionally sloped. The surfaces of both lower and upper cylinder are smooth, and no pattern is applied.

[0023] The invention is described now in more detail with respect to embodiments shown in the drawings wherein:

Figure 1 is a schematic view of a known hot embossing process (prior art);

Figure 2 shows a schematic view of cold and wet embossing process involving a machine according to the invention;

Figures 3 and 4 are a schematic side view (Fig. 3) and front view (Fig. 4) of an embossing machine according to the invention;

Figure 5 is a schematic view of A.C. and D.C. flocking and sections of flocked fabric; and

Figure 6 shows a fabric surface of a product manufactured by an embossing using a machine according to invention.

[0024] Figure 1 illustrates a schematic view of a hot embossing process (prior art) where a fabric 1 is advanced to a J-box 2, a unit collecting fabric. Thereafter, the fabric 1 is moved to a brush unit which serves to remove foreign materials from the surface of the fabric 1. Then, the fabric 1 is passed to a machine 4 comprising a hot patterned steel cylinder, whereafter the fabric 1 is advanced to cooling cylinders 5; finally, the hot embossed end-product 6 is coiled.

[0025] In Figure 2, a schematic view of cold and wet embossing involving a machine according to the invention is shown. More in detail, a fabric 23 is uncoiled, is led to a binder application unit 24, and is passed thereafter to a flocking unit 25 and to a suction unit 26, for removing excess flocks. Then, the fabric 23 is passed to and through a cold embossing machine 27 which will be described below more in detail, with reference to Figures 3 and 4.

[0026] After embossing, the fabric 23 is advanced to an oven 28, and thereafter to cold cylinders 29, for cooling purposes. Finally, the embossed fabric 23 is moved to a retraction cylinder 30, and the end product 31 is coiled up.

[0027] The embossing machine 27 is shown in detail in Figures 3 and 4. This machine 27 comprises pistons 10 which serve to slide an embossing steel cylinder 15. A carrier or support 11 carries this embossing cylinders 15, and similarly, further embossing cylinders are carried by carriers, s. reference numerals 11A, 11B in Figure 3. A motor 12 serves to turn the carriers 11, 11A, 11B to change the respective embossing steel cylinder 15 to the operation position. A further motor 13 serves to adjust the distance between the embossing steel cylinders 15 and a lower steel cylinder 14, an unpatterned cylinder. The steel embossing cylinder 15 is patterned by an acid corrosion method, or it may be a rubber coated cylinder.

[0028] Furthermore, a water reservoir 16 is provided beneath the unpatterned steel cylinder 14 which is partly immersed in this water reservoir 16. Scraping blades 17 are provided next to the unpatterned steel cylinder 14 for cleaning it, and vacuum brushes 18 as well as a high pressure air blowing system 19 are arranged near the embossing steel cylinder 15 to clean its surface. A (main) motor 20 serves to rotate the unpatterned steel cylinder 14, this motor 20 being fixed to a machine body 21 which is supported on rails 22. A motor 32 is associated with the machine body (frame) 21 to move the machine 27 along the rails 22.

[0029] In Figure 5, A.C. and D.C. flocking, or respective flock views, are schematically shown, namely in particular an A.C. flocking 7a and a D.C. flocking 7b.

[0030] Figure 6 illustrates views of fabric surfaces obtained by a cold and wet embossing machine 27. In particular, 6a is a view of a fabric surface; 6a.1. is a flock coated fabric; 6a.2. is a cold-embossed flocked fabric; 6b.1. is a side sectional view of an unembossed flocked fabric; and 6b.2. is a side sectional view of an embossed flocked fabric.

[0031] The main process steps of the system according to Fig. 2 are as follows:

The fabric 23 is unrolled and guided to the binder application unit 24 and thereafter to the flocking unit 25. Then, the colour or natural flocked wet fabric 23 is directly passed from the flocking unit 25 to the suction unit 26 and to the embossing machine 27, namely between the upper patterned steel cylinder 15 and the lower unpatterned steel cylinder 14 (s. Fig. 3).

[0032] Then, the embossed and flocked wet fabric 23 is dried by means of the oven 28, and passed to the cold cylinder 29, so that a dyed embossed and colour or natural flocked fabric 23 in single or multiple-colour(s) is obtained which is taken up by the retraction cylinder 30 and then coiled up as end product 31.

[0033] Thus, the colour or natural colour flocked, wet fabric 23 (but undyed) coming from flocking unit 25 is directly provided with a pattern by the embossing machine 27; if natural flock is used, various dyeing methods may be used, and the aforementioned process steps are sequentially performed.

[0034] As already mentioned, the present embossing machine 27 comprises the following elements:

- Patterned embossing steel cylinder 15 (patterned by acid corrosion method or rubber coated)
- Unpatterned (straight) steel or plastic carrier cylinder 14
- Scraping blade 17 which may be a steel and plastic blade 17 continuously cleaning the surface of the lower cylinder 14
- Vacuum brushes 18 cleaning the surface of the patterned steel cylinder 15
- Pressure air jet system 19 removing foreign materials from the surface of the patterned steel cylinder 15 or from pattern holes
- Machine body 21 which can be moved left/right side (according to the representation in Fig. 4) on rails 22 by motor 32

- Water reservoir 16, enabling the contact of the lower cylinder 14 with water
- Motor 13, adjusting the distance between the lower and upper cylinders 14, 15 in microns.

[0035] Furthermore, sensors (not shown) are provided to monitor right/left movements of fabric 23 when passing through the machine 27.

[0036] The system of Fig. 2 comprises a fabric 23 to be flocked, a binder laying apparatus 24, a flocking unit 25 where the binder coated fabric 23 will be flocked, and a suction unit 26 where free flocks on the flocked and wet fabric 23 are suctioned from beneath and above the fabric 23. Additionally, there is an oven 28 where the wet embossed and flocked fabric 23 is dried, if necessary, and also units which serve for brushing, cooling and rolling the dry flocked fabric 23.

[0037] Correspondingly, the method for obtaining the wet embossed flocked fabric end product 31 comprises the steps of plastering the binder on the fabric 23 which will be flocked, flocking the binder coated fabric 23, sucking the free flocks from the surface and bottom of the flocked wet fabric 23, patterning the flocked fabric 23 by passing it between the patterned steel cylinder 15 and the straight cylinder 14 rotating in water, drying the wet patterned and flocked fabric 23, brushing the flocked fabric 23, cooling and rolling the fabric as bobbin (end product 31).

[0038] There are two types of flocking processes, namely A.C. and D.C. flocking. In general, an A.C. flocking system is used in United States of America, However, in European Union countries, the D.C. flocking system is applied. According to Fig. 5, in A.C. flocking, flocks 7a are stucked on binder, coated on fabric, by an angle of 75 degrees whereas in D.C. Flocking (Fig. 5), flocks 7b are stucked on binder, coated on fabric, by an angle of 90 degrees. Flock powders are stucked on wet binder, coated on fabric, by electric current, by an electric field which is formed by increasing voltage to 220 Volt and decreasing ampere to milli-Ampere. Technical values of electric power are completely different in D.C. and A.C. electrical fields, and there are also differences in the systems and apparatus used. The positions of flocks stucked into the binder are also different, as mentioned (s. Fig. 5). Additionally, chemical conductor materials used in flocking are different with respect to amount and type.

[0039] There are significant differences between products manufactured by the two techniques. The D.C. flocking method is used here. While flocked fabric 23, coming wet from flocking unit 25, is passed between patterned cylinder 15 and straight cylinder 14, flocks on fabric are embedded into the binder in a transverse manner by adjustable pressure of the upper patterned embossing steel cylinder 15. Due to the pattern formed on the upper steel cylinder 15, a pattern is formed by the flocks which are embedded into the wet binder on the fabric 23 but not pressed, cf. Fig. 6 with the embossed portions 6b.2, in

comparison with the flocked coated fabric 6a.1/6b.1. This product is transferred to the oven 28 and is dried, so that the process is completed. However, if the lower unpatterned cylinder 14 and the upper patterned steel cylinder 15 are not continuously cleaned during operation, the machine cannot operate. Binder contaminants, flock lumps or other materials on the lower unpatterned cylinder 14 or on the upper patterned cylinder 15 cause defects during each rotation of the cylinders. After a particular period, the machine 27 cannot form that wished pattern. These troubles are completely avoided in the machine according to the invention, so that an apparatus has become available to be efficiently used in this industry.

[0040] The unpatterned cylinder 14 rotates within the water reservoir 14. Therefore, foreign materials on the surface of this cylinder 14 are removed with water.

[0041] In order to change (replace) the respective upper patterned steel cylinder 15, e.g. two further patterned cylinders 11A, 11B may be provided in the machine 27. While one of the patterned steel cylinders, 15, 11A or 11B, is working, the other cylinders are kept as back-up, i.e. for changing the operating cylinders.

[0042] In the present machine 27, patterns with any shape or appearance can be formed.

[0043] In the present system, with forming patterns on flocked fabric 23, the fabric, which was wet and cold embossed and painted in natural colour in different length, brightness and denier, and which was dried, is directly transferred to washing and drumming machine if colour flock is applied; or the fabric is transferred to either wet embossing machine or rope - dyeing units and dried following oven, if natural (white) flock is applied. Moreover, multi-colour appearance is obtained by paper transfer embossing method.

[0044] The described techniques may be used in embossing upholstery and wear fabrics used in furniture and ready-made-wear industry. Additionally, products related to curtains, packaging and wall coatings can be manufactured. In first procedure, a base (web) is coated by natural or colour flock via steel cylinder and dried, then adhesive (binder) is laid on this surface smoothly, followed by natural or colour flock application, and finally, the product is dried. This dried product is wet and multi-coloured embossed; a totally different product is obtained; or the product is transferred to a rope-dyeing unit and another type of product is obtained or the product is painted by multiple colours with the aid of paper transfer method. If colour flock is applied in final layer, product is passed through washing and drumming machines. It is coated by colour flock with various lengths, brightness and denier in flocking unit, and the embossed and dried flocked fabric is subjected to washing and drumming process, if colour flock is used.

[0045] Contrary to other products, flocks are embedded into the binder applied to the fabric by steel cylinder 15 in accordance with the pattern, and these products possess the following unique features:

- the contours of pattern are more clear and three-dimensional;
- the contours of pattern are more deep and permanent;
- as free flocks and binder-embedded flocks absorb, different amounts of dye tone and surtone colours appear (dual-colour).

Claims

1. An embossing machine for forming a pattern on an advancing flocked wet fabric (23), e.g. an upholstery stuff used in furniture sector, fabrics used in clothing sector and curtain fabrics as well as fabrics for packaging and for wall coatings, said machine comprising an acid-corrosion, patterned embossing steel cylinder or a patterned rubber coated embossing steel cylinder (15), which embossing steel cylinder forms a pattern directly on the flocked fabric, and an unpatterned straight cylinder (14), which is arranged beneath the embossing steel cylinder (15) and cooperates with the patterned steel cylinder (15), **characterized in that** the unpatterned straight cylinder (14) is arranged to rotate within a water reservoir (16), and **in that** at least one scraping blade (17) is arranged near the unpatterned straight cylinder (14) to clean the surface of the unpatterned straight cylinder (14) rotating within the water reservoir (16); **in that** vacuum brushes (18) and a high-pressure blowing air-system (19) are arranged near the embossing steel cylinder (15), to clean the surface of the embossing steel cylinder (15); **in that** a motor system (13) is arranged to adjust the distance between the embossing steel cylinder (15) and the unpatterned straight cylinder (14); **in that** a sensor system is provided for monitoring an edge of the advanced flocked fabric (23) thus monitoring right-left movements of the advancing fabric, and a system with a motor (32) is associated with a body (21) of the machine to move it on rails (22) to the left or right side of the machine, and **characterized by** a cylinder changing system comprising a motor (12) and arranged for rapid replacement of the embossing steel cylinder (15) by back-up cylinders (11A, 11B) supported on a carrier (11) near the embossing steel cylinder (15) in the operative position.
2. An embossing method for forming a pattern on a wet flocked fabric by passing the fabric (33), to which a binder and, thereafter, flocks have been applied before, with free flocks having been sucked away from the flocked wet fabric, between a patterned embossing steel cylinder (15), namely an acid-corrosion, patterned embossing steel cylinder or a patterned rubber coated embossing steel cylinder (15), which

forms the pattern directly on the flocked fabric, and an unpatterned straight cylinder (14) which is arranged beneath the embossing steel cylinder (15) and cooperates with the embossing steel cylinder, **characterised in that** the unpatterned straight cylinder (14) is rotated within a water reservoir (16), **in that** the surface of the unpatterned straight cylinder (14) is cleaned by means of at least one scraping blade (17), and **in that** the surface of the embossing steel cylinder (15) is cleaned by means of vacuum brushes (18) and a high-pressure blowing air-system, whereafter the flocked and wet-patterned fabric (23) is dried.

3. A system for producing and embossed flocked fabric (23) comprising an embossing machine according to claim 1, and further comprising washing drum units, in the case of color flocks, upstream of the embossing machine.
4. A system for producing an embossed flocked fabric (23) comprising an embossing machine according to claim 1, and further comprising dyeing or paper transfer painting units, in the case of natural flocks, upstream of the embossing machine.

Patentansprüche

1. Prägemaschine zum Ausbilden eines Musters auf einem sich vorwärts bewegenden nassbeflockten Gewebe (23), z.B. einem Polsterstoff, der im Möbelsektor verwendet wird, Geweben, die im Bekleidungssektor verwendet werden, und Vorhangstoffen, sowie Geweben zur Verpackung und für Wandbekleidungen, wobei die Maschine einen mit einem Muster versehenen Säurekorrosions-Prägestahlzylinder oder einen mit einem Muster versehenen gummibeschichteten Prägestahlzylinder (15), wobei der Prägestahlzylinder ein Muster direkt auf dem beflockten Gewebe ausbildet, und einen ungemusterten geraden Zylinder (14) aufweist, der unter dem Prägestahlzylinder (15) angeordnet ist und mit dem mit dem Muster versehenen Stahlzylinder (15) zusammenarbeitet, **dadurch gekennzeichnet, dass** der ungemusterte gerade Zylinder (14) angeordnet ist, sich in einem Wasserbehälter (16) zu drehen, und dass wenigstens eine Schabeklinge (17) nahe dem ungemusterten geraden Zylinder (14) angeordnet ist, um die Oberfläche des ungemusterten geraden Zylinders (14), der sich in dem Wasserbehälter (16) dreht, zu reinigen; dass Vakuumbürsten (18) und ein Hochdruck-Luftgebläsesystem (19) nahe dem Prägestahlzylinder (15) angeordnet sind, um die Oberfläche des Prägestahlzylinders (15) zu reinigen; dass ein Motorsystem (13) angeordnet ist, um den Abstand zwischen dem Prägestahlzylinder (15) und dem ungemusterten geraden Zylinder (14) ein-

zustellen; dass ein Sensorsystem vorgesehen ist, um eine Kante des sich vorwärts bewegenden beflockten Gewebes (23) zu überwachen und somit Links-Rechts-Bewegungen des sich vorwärts bewegenden Gewebes zu überwachen, und dass ein System mit einem Motor (32) einem Körper (21) der Maschine zugeordnet ist, um sie auf Schienen (22) zur linken oder rechten Seite der Maschine zu bewegen, und **gekennzeichnet durch** ein Zylinderwechselsystem, das einen Motor (12) aufweist und zum raschen Ersetzen des Prägestahlzylinders (15) **durch** Reservezylinder (11A, 11B), die in Betriebsstellung auf einem Träger (11) nahe dem Prägestahlzylinder (15) gehalten werden, ausgelegt ist.

2. Prägeverfahren zum Ausbilden eines Musters auf einem nassbeflockten Gewebe durch Führen des Gewebes (33), auf das zuvor ein Bindemittel und anschließend Beflockung aufgebracht wurden, wobei freie Beflockung von dem nassbeflockten Gewebe weggesaugt wurde, zwischen einem mit Muster versehenen Prägestahlzylinder (15), nämlich einem mit Muster versehenen Säurekorrosions-Prägestahlzylinder oder einem mit Muster versehenen gummibeschichteten Prägestahlzylinder (15), der das Muster direkt auf dem beflockten Gewebe ausbildet, und einem ungemusterten geraden Zylinder (14), der unter dem Prägestahlzylinder (15) angeordnet ist und mit dem Prägestahlzylinder zusammenarbeitet, **dadurch gekennzeichnet, dass** der ungemusterte gerade Zylinder (14) in einem Wasserbehälter (16) gedreht wird, dass die Oberfläche des ungemusterten geraden Zylinders (14) mittels wenigstens einer Schabeklinge (17) gereinigt wird, und dass die Oberfläche des Prägestahlzylinders mithilfe von Vakuumbürsten (18) und einem Hochdruck-Luftgebläsesystem gereinigt wird, wonach das beflockte und nassgemusterte Gewebe (23) getrocknet wird.

3. System zum Herstellen eines geprägten beflockten Gewebes (23), das eine Prägemaschine gemäß Anspruch 1 aufweist, und das des Weiteren Waschtrommeleinheiten aufweist, die im Fall von Farbbeflockung der Prägemaschine vorgeschaltet sind.
4. System zum Herstellen eines geprägten beflockten Gewebes (23), das eine Prägemaschine gemäß Anspruch 1 aufweist, und das des Weiteren Färbe- oder Transferpapiermaleinheiten aufweist, die im Fall von natürlicher Beflockung der Prägemaschine vorgeschaltet sind.

Revendications

1. Gaufreuse destinée à former un motif sur un tissu humide floqué avançant (23), par exemple un produit

de rembourrage utilisé dans le secteur du mobilier, un tissu utilisé dans le secteur de l'habillement et un tissu pour rideau ainsi qu'un tissu pour l'emballage et pour les revêtements muraux, ladite machine comprenant un cylindre de gaufrage en acier gravé par corrosion à l'acide ou un cylindre de gaufrage en acier revêtu d'un caoutchouc à motifs (15), lequel cylindre de gaufrage en acier forme un motif directement sur le tissu floqué, et un cylindre rectiligne sans motif (14), lequel est disposé sous le cylindre de gaufrage en acier (15) et coopère avec le cylindre à motifs en acier (15), **caractérisée en ce que** le cylindre rectiligne sans motifs (14) est conçu pour tourner dans un réservoir d'eau (16), et **en ce qu'**au moins une lame de raclage (17) est disposée à proximité du cylindre rectiligne sans motifs (14) pour nettoyer la surface du cylindre rectiligne sans motifs (14) tournant dans le réservoir d'eau (16); **en ce que** des brosses à aspiration (18) et un système de soufflage d'air à haute pression (19) sont disposés à proximité du cylindre de gaufrage en acier (15), pour nettoyer la surface du cylindre de gaufrage en acier (15); **en ce qu'**un système de moteur (13) est conçu pour régler la distance entre le cylindre de gaufrage en acier (15) et le cylindre rectiligne sans motifs (14); **en ce qu'**un système de détection est destiné à surveiller un bord du tissu floqué avançant (23), surveillant ainsi les mouvements vers la droite et vers la gauche du tissu avançant, et un système pourvu d'un moteur (32) est associé à un corps (21) de la machine pour le déplacer sur des rails (22) vers le côté gauche ou droit de la machine, et **caractérisée par** un système de changement de cylindre comprenant un moteur (12) et conçu pour un remplacement rapide du cylindre de gaufrage en acier (15) par des cylindres de contre-pression (11A, 11B) portés sur un support (11) à proximité du cylindre de gaufrage en acier (15) dans la position opérationnelle.

2. Procédé de gaufrage destiné à former un motif sur un tissu floqué humide en faisant passer le tissu (33), sur lequel un liant et, après cela, des flocs ont été précédemment appliqués, des flocs libres ayant été aspirés du tissu humide floqué, entre un cylindre de gaufrage en acier à motifs (15), à savoir un cylindre de gaufrage en acier gravé par corrosion à l'acide ou un cylindre de gaufrage en acier revêtu d'un caoutchouc à motifs (15), lequel forme le motif directement sur le tissu floqué, et un cylindre rectiligne sans motifs (14), lequel est disposé sous le cylindre de gaufrage en acier (15) et coopère avec le cylindre de gaufrage en acier, **caractérisé en ce que** le cylindre rectiligne sans motifs (14) est amené en rotation dans un réservoir d'eau (16), **en ce que** la surface du cylindre rectiligne sans motifs (14) est nettoyée au moyen d'au moins une lame de raclage (17), et **en ce que** la surface du cylindre de gaufrage en acier (15) est nettoyée au moyen de brosses à

aspiration (18) et d'un système d'air de soufflage à haute pression, à la suite de quoi le tissu floqué et humide à motifs (23) est séché.

3. Système de production d'un tissu floqué gaufré (23) comprenant une gaufreuse selon la revendication 1, et comprenant en outre des unités formant tambour de lavage, dans le cas de flocs de couleur, en amont de la gaufreuse.
4. Système de production d'un tissu floqué gaufré (23) comprenant une gaufreuse selon la revendication 1, et comprenant en outre des unités de coloration ou d'enduction de peinture par transfert sur papier, dans le cas de flocs naturels, en amont de la gaufreuse.

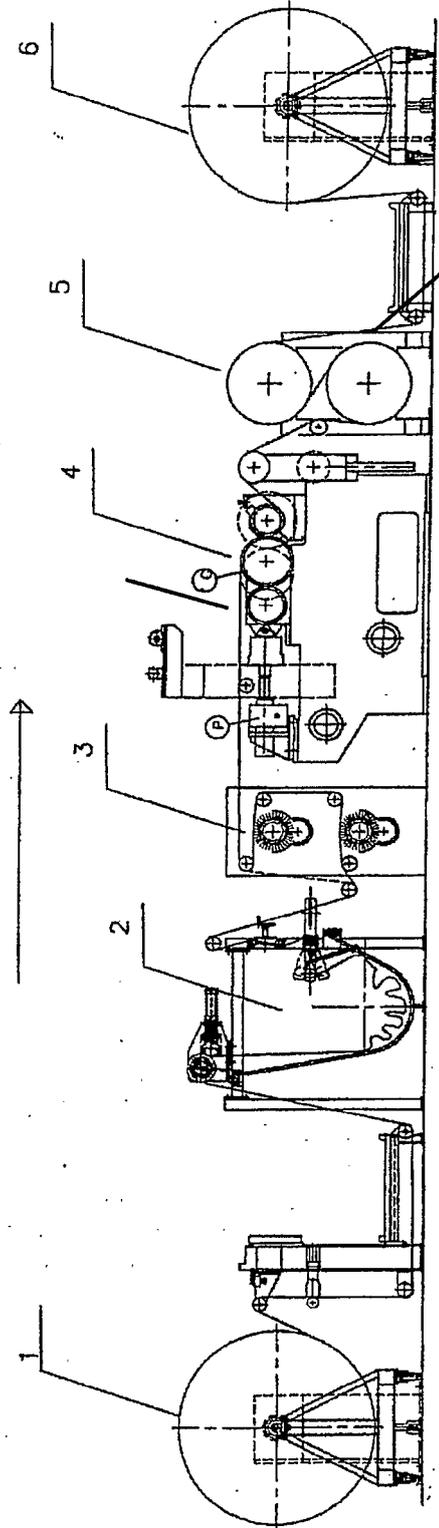


FIG. 1
(Prior Art)

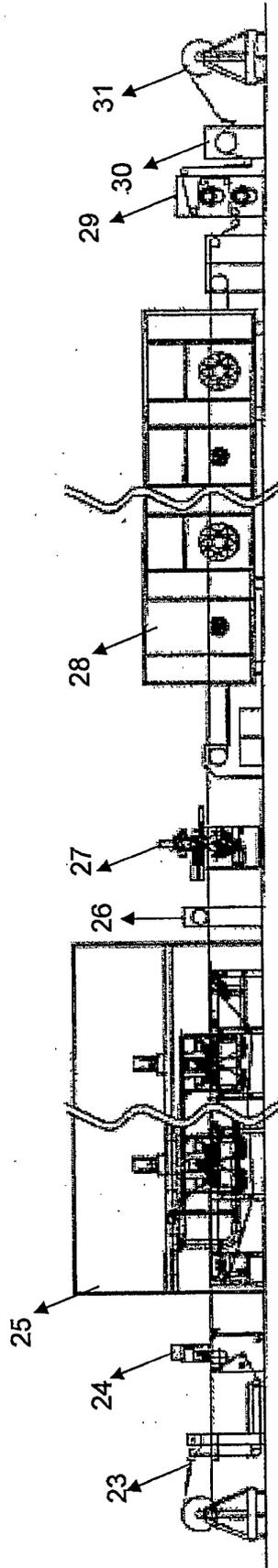


FIG. 2

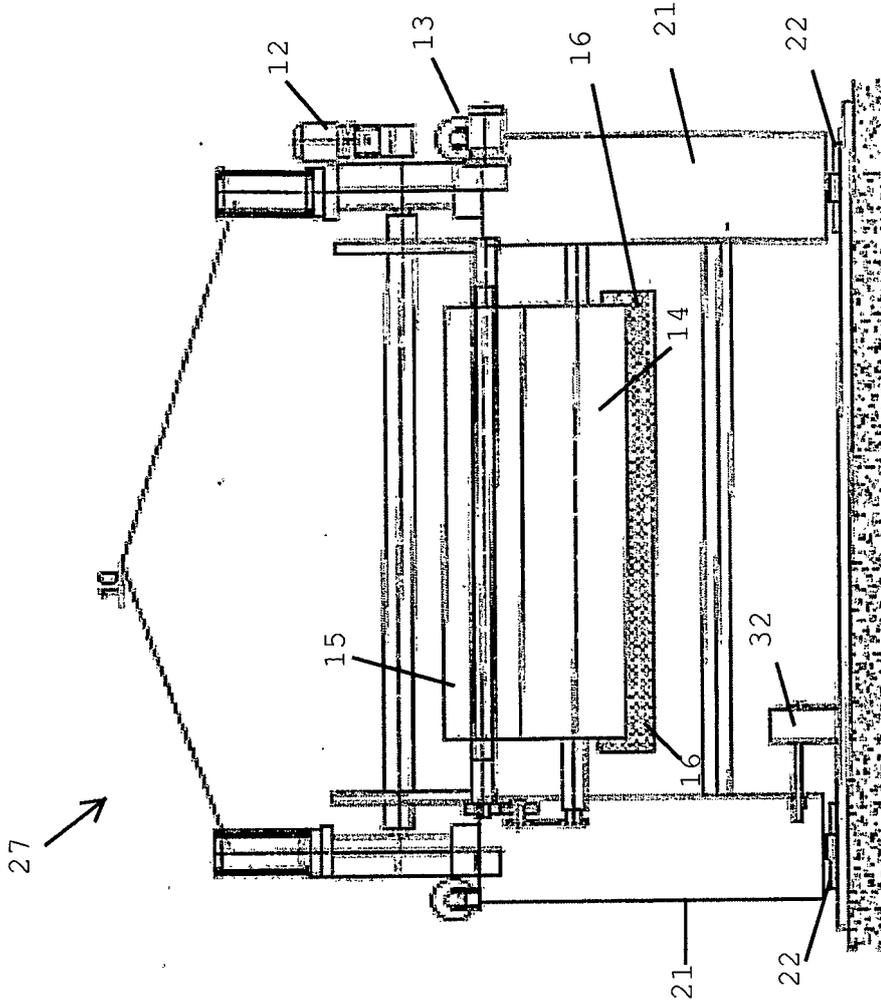


FIG. 4

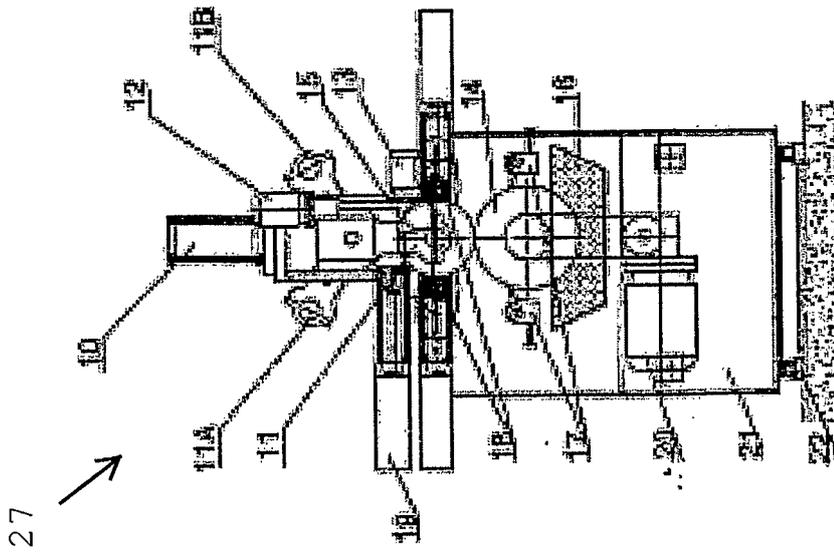


FIG. 3

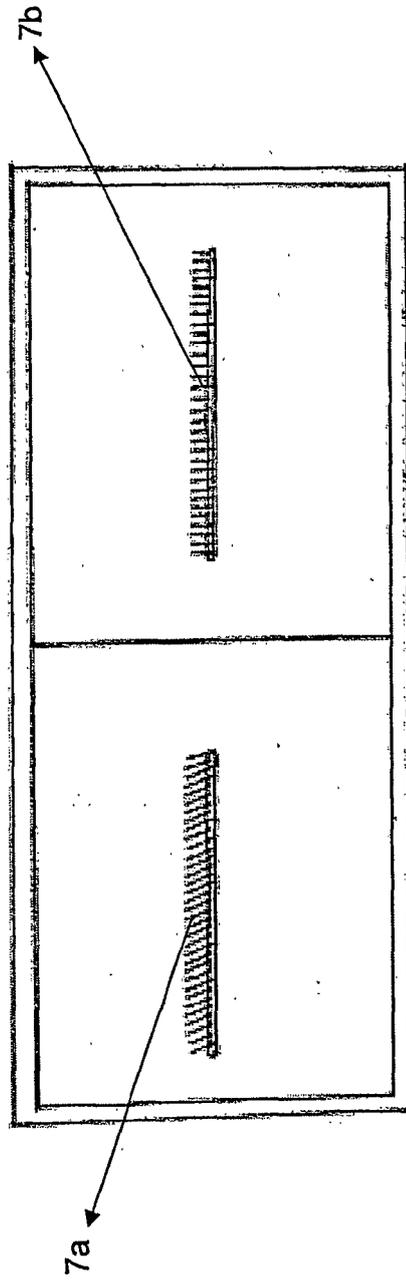


FIG. 5

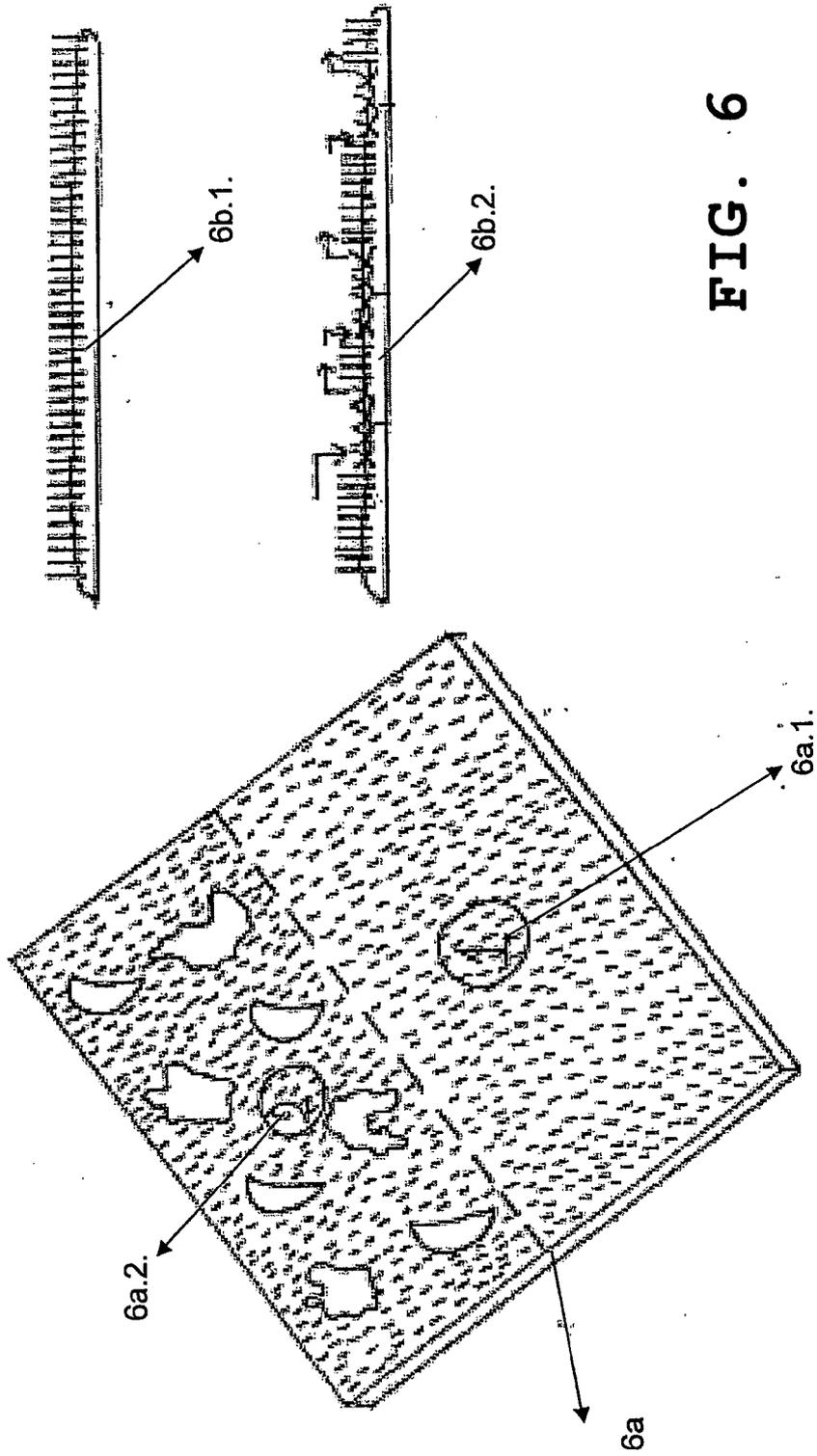


FIG. 6

REFERENCES CITED IN THE DESCRIPTION

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