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(54) **Process of foam-treating textile materials.**

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Process of foam-treating textile materials

This invention relates to textile materials and, more particularly, to the application of finishing agents to textile materials.

Conventionally, the treating of textile materials with finishing agents, e.g., coloring agents or dyes, resins, softeners, flame retardant agents, soil release agents and the like involves a procedure wherein the finishing agent is either dissolved or dispersed in a suitable liquid medium carrier such as an aqueous or organic liquid, and then applied to the textile, such as by passing the textile through a bath or vat containing the solution or dispersion. Thereafter, the carrier is removed from the fabric, usually by evaporation with or without heat. Since only a small amount of the finishing agent is needed to achieve the desired effect, a relatively large amount of carrier (water) is used to assure uniform distribution of the finishing agent. This results in relatively large amounts of liquid medium which must be removed from the fabric. Consequently, a substantial amount of the cost incurred in such processes resides in the liquid medium removal step.

For many textiles it is desired to apply more than one finishing agent thereto. For example, it may be desirable to first dye the textile and then apply a durable press agent or to apply both durable press and soil release agents to the textile. Since relatively few of such combinations of finishing agents can be applied together from the same medium, such multiple agents are typically applied to the textile in a serial manner. Thus, for example, a coloring agent is first applied to the textile; the textile is then dried; and the colored textile then treated with a further fabric finishing agent in a conventional manner and then re-dried.

In the foregoing process, the disadvantages earlier described as being associated with the conventional utilization of large quantities of liquid medium in the application of finishing agents are necessarily multiplied. In an effort to avoid the difficulties involved with large amounts of liquid and the high cost of liquid removal processes, it has been attempted to conduct the serial application of finishing agents to a textile without intermediate drying of the textile after each application. However, this manner of operation itself leads to serious problems. Thus, when the wet textile to which a first finishing agent solution or dispersion has been applied is brought into contact with a second liquid finishing agent composition, e.g., when the wet textile is passed through a bath thereof, the liquid associated with the textile from the first application serves to dilute or otherwise alter the composition of the second finishing agent solution or dispersion. It is thereby nearly impossible to accurately control the application of specified quantities of the second finishing agent to the textile, even with the utilization of complicated measuring devices and bath replenishment techniques.

US—A—4099913 and FR—A—22 66 766 describe the applying of textile treating compounds using foam compositions that break immediately on contact with the textile material and are rapidly absorbed.

Summary of the invention

It is accordingly an object of the present invention to provide a process for treating a textile with more than one finishing agent.

A further object of the present invention is to provide a serial process for treating a textile with at least one finishing agent which does not require intermediate fixation of the textile prior to application of a foam composition thereover.

A still further object of the present invention is to provide a process of the type mentioned which does not present difficulties in the control of the amounts of finishing agent applied to the textile.

These and other objects are achieved by the provision of a process wherein a textile is first treated with a finishing agent-containing composition and, without prior fixation, (i.e., complete removal of all liquid therefrom), is thereafter treated with a second covering composition which is applied in the form of a foam. The textile is then treated to collapse the foamed composition and effect uniform penetration of the finishing agent into the fabric.

The treatment of textiles in accordance with the present invention has the advantage of eliminating costly liquid removal procedures between application of finishing agents. Moreover, it has been found that application of the second finishing agent in the subsequently applied foamed composition avoids the earlier-referred to dilution effect arising from conventional application of the second finishing agent in a liquid solution or suspension since significantly less liquid *per se* is required when such compositions are applied as foams, and since the foam can be applied without the need for passing the textile through a bath or vat containing the liquid finishing agent composition.

In accordance with the present invention, the application of the first finishing agent-containing composition to the textile can be accomplished in accordance with conventional techniques, e.g., by continuously passing the textile through a bath or vat containing the liquid composition. However, according to a preferred embodiment of this invention, the first finishing agent composition may be applied in the form of a foam. In this method of operation, this first foam applied to the textile is collapsed, prior to application of the second foamed composition to the textile. Such collapsing of the first applied foam may occur upon appli-

cation such as when using rotary screen printers and the like.

Finishing agent-containing compositions for utilization in the present invention are known in the art and typically comprise a finishing agent and an aqueous or organic liquid carrier medium along with other known, optional ingredients.

The various finishing agents which may be utilized in the treatment of textiles according to the present invention include coloring agents, dyes, pigments, durable press agents, soil release agents, weighting agents, flame retardants, water repellents, softeners, and the like. Foamable, liquid compositions containing such finishing agents, and methods of preparing foams therefrom, are known in the art.

In specific embodiments of the present invention, the application of the first finishing agent-containing composition may comprise printing the textile with a pre-selected pattern in accordance with known procedures, e.g., by use of an intaglio printing cylinder or a rotary screen printer. The first composition may be a conventional liquid printing composition, a foamed printing composition or a powdered composition. After application, a foamed composition, with another finishing agent, is applied to the textile prior to fixation of the first applied finishing agent to the printed textile.

The process of the present invention will typically be utilized for the serial application of two or more differing types of finishing agents to a textile, e.g., a colorant and a water-repellent or a colorant and a durable press agent, although numerous other combinations exist.

As utilized herein, textile material is intended to include, without limitation, fabrics made from threads, yarns, woven or knitted goods, resin bonded mats of fibres, and the like.

According to this invention, the second, serially applied fabric finishing agent is applied to the textile in the form of a foam while the textile still contains a first finishing agent-containing composition (either foam, liquid or powder). Thus, as utilized herein, application of the second composition without prior fixation of the textile is intended to describe and embrace processes wherein the textile has not been fully dried after application of the first composition. Hence, it is possible according to this invention that varying degrees of liquid removal, short of complete or near-complete drying, from the textile can be performed before application of the second, foamed composition, although the economic advantages of the present invention necessarily decrease in proportion to the degree of such an intermediate liquid removal step. Moreover, a certain degree of liquid removal from the textile may occur simply as a result of normal processing prior to application of the second, foamed composition. For example, some liquid may be removed by virtue of passage of the textile through conventional squeeze rolls prior to passing to the second serial application step. In the case of foam printing, the generally preferred manner of collapsing the foam is accomplished by the printing screen or print roller at the instant the foam is applied to the fabric.

In general, the textile to which the second finishing agent composition is applied will have about 10 to 65% liquid, by weight, associated therewith.

Brief description of the drawings

Fig. 1 is a schematic representation of an embodiment depicting the process of the present invention wherein the first liquid and finishing agent-containing composition is applied as a solution or dispersion.

Fig. 2 is a schematic representation of an embodiment of the present invention wherein the first finishing agent-containing composition is applied in the form of a foam.

Description of the preferred embodiment

The present invention is more fully described with reference to the description of the drawings and the Examples which follow.

With reference to Fig. 1, a roll of fabric 10, travelling in the direction indicated by the arrow, is passed by suitable conveying means to a bath 12 containing a pre-prepared liquid e.g., aqueous or organic liquid, solution or dispersion containing an appropriate finishing agent, e.g., a dye material to color the fabric. The dyed fabric is then passed through squeeze or compression rollers 14 and 16 which serve to remove some of the liquid contained in the fabric by virtue of its passage through the solution or dispersion. Without any further liquid removal, i.e., before complete drying, the dyed fabric is coated with a foamed finishing agent composition. Thus, a foamable liquid composition comprised of liquid, foaming agent and finishing agent, e.g. a durable press agent, is formed into a foam in foamer 18. Foamer 18 may be any type foaming device conventionally utilized in the art, e.g., Oakes, Godwin card, Kitchenaid, etc.

The foamed composition is transferred through line 22 by pump 20 to knife 24. At this point the foamed composition is coated onto the dyed fabric to produce a coated fabric 26. The coated fabric 26 then goes through nip rollers 28 and 30 to compress and collapse the foam and achieve penetration of finishing agent into the fabric. Such foam collapse may also be achieved by the application of vacuum, or a combination of vacuum and padding. Thereafter, the impregnated fabric is conveyed through a fixation means 32 which may be any of those conventionally known in the art. The fixed fabric is then wound on to take-up roll 34.

An alternative embodiment of the process of the present invention is shown in Fig. 2. A roll of fabric 40, travelling in the direction of the arrow by suitable conveying means, is coated with a

first foamed fabric finishing agent composition. Such a foamed composition is prepared by foaming a suitable composition, e.g., a dye-containing foamable composition, in foamer 42. The foamed composition is pumped by pump 44 through line 46 to a rotary printing screen 48 at which a predetermined pattern is applied to the fabric. As mentioned previously, with such a printing screen, the foam is caused to collapse upon application. If a procedure is employed in which the foam is not collapsed upon application, the so-coated fabric 50 is then passed over vacuum or padding device 56 or a combination of the two which serves to collapse the foam but which does not effect liquid removal from the fabric.

The so treated fabric 66 is then coated with a second foamed finishing agent composition, formed by foaming a suitable composition, e.g., a durable press-containing foamable composition, in foamer 58. The second foamed composition is transferred by pump 60 through line 62 to knife 64 where it is coated on the fabric. The so-coated fabric 68 is then padded by passing through nip rollers 70 and 72 to collapse the foam and deeply penetrate the finishing agent into the fabric. The fabric is then conveyed to a fixation means 74 and wound on take-up roll 76.

The following Examples illustrate various specific features of the process of the present invention.

Example I

A foamable pigment composition containing 70.86% water, 2.07% ammonium stearate, 0.78% lauryl alcohol, 4.29% Acrysol ASE-60® (an acrylic polymer emulsion having 28% solids (Rohm & Haas Co.)), 2% Valmel-45® (a methylolated melamine), 10% Valbond-6063® (an acrylic copolymer emulsion) and 10% Questral Blue 3G® (phthalocyanine pigment) was foamed to a 3:1 blow ratio and printed through a 50 mesh rotary screen on 100% cotton print cloth and 50/50 polyester/cotton blend sheeting samples. The printing foam was collapsed by the action of the screen upon application of the foam to the fabric.

A foamable durable press resin composition was prepared containing 52.10% water, 0.62% Methocel J-75MS® (an etherified hydroxyethyl cellulose), 1.37% Unamide N-72—3® (a coconut alkanolamide from Lonza Chem. Co.), 36.16% Valrez-248® (a modified glyoxal resin) and 9.8% Valcat No. 7® (a magnesium chloride catalyst). This composition was foamed to a blow ratio of 9:1 and knife coated to a thickness of 0,15 mm on the wet printed samples previously prepared as described above. The fabric samples were then vacuumed, dried and cured at 177°C.

The definition of the prints was excellent and the fabrics possessed durable press properties tested after repeated laundering.

As a control, a sample of the previously described foam printed 100% cotton was passed through a conventional finishing bath of Valrez-248® and Valcat No. 7® and nipped through a vertical pad. The fabric was dried and cured as before.

The print exhibited severe flushing and loss of definition so as to make the fabric commercially unacceptable. There was also some transfer of color to the pad bath.

Example II

The foamable durable press resin composition described in Example I was foamed to a blow ratio of 8:1 and knife-coated to a thickness of 0,15 mm onto 100% cotton and 50/50 polyester/cotton blend fabrics. The fabrics were vacuumed and, while wet, were printed utilizing the foamed pigment composition and conditions described in Example I.

Good print definitions and durable press properties were obtained.

Example III

A foamable composition containing 2% Resolin Blue FBL® (disperse), 1% Procion Blue HA® (reactive), 1% sodium bicarbonate and 96% of a foamable composition containing 97.75% water, 0.75% QP-52000® (hydroxethyl cellulose thickener from Union Carbide) and 1.5% Unamide N-72—3® was prepared and foamed to a blow ratio of 10:1.

A second durable press resin composition containing 50.75% water, 0.75% QP-52000®, 35% Valrez-248®, 3% Valsof PE-19® (a polyethylene emulsion), 1% Unamide N-72—3® and 9.5% Valcat No. 7® was also foamed to a blow ratio of 10:1.

On a 65/35 polyester/cotton blend fabric, the dye foam was coated to a thickness of 0,51 mm and the coated fabric pulled over a vacuum (wet pick-up 45%). On the dye-applied wet fabric, the durable press foam composition was knife-coated to a thickness of 0,64 mm. The fabric was then vacuumed (total wet pick-up 62%), and dried and cured at 166°C for 3 minutes.

The fabric contained good durable press properties and was uniformly dyed.

A sample of the wet foam dyed fabric was also passed through a conventional finishing bath consisting of Valrez-248®, Valsof PE-19® and Valcat No. 7® in the same ratio as the foam finishing composition but at an 8% solids concentration. Thers was significant bleeding of color into the pad bath causing the fabric to be off-shade.

Example IV

A sample of 65/35 polyester/cotton blend was dyed, using the beck dyeing procedure, with 1% Sirius Supra Blue BRL® (direct dye) and 2% Resolin Blue FBL® (disperse) based on the weight of the fabric. After the dyeing cycle, the fabric was rinsed, padded and vacuumed.

The durable press resin composition of

Example III was foamed to a blow ratio of 10:1 and coated to a thickness of 0,64 mm onto the wet beck-dyed fabric. The fabric was then padded at 2,4 bar, dried at 104°C and cured at 166°C for 3 minutes.

The fabric possessed durable press properties and was uniformly dyed.

As a control, a sample of the wet dyed fabric was passed through a conventional finishing bath of the composition described in Example III. Again there was bleeding of the color from the fabric into the pad bath.

Example V

A foamable disperse dye composition containing 2% Resolin Brill. Yellow 7 GL® in 98% of a composition containing 0.75% QP-52000®, 1.5% Unamide N-72—3® and 97.75% water (adjusted to a pH of 5.5 with acetic acid) was prepared anf foamed to a blow ratio of 8:1. This foamed composition was then knife coated to a thickness of 0,89 mm on a polyester double knit fabric. The fabric was then passed over a vacuum slot.

A second foamable composition containing 2% Resolin Red FB® (Disperse Red-60) in 98% of a composition containing 0,75% QP-52000®, 1.5% Unamide N-72—3®, and 97.75% water (adjusted to pH 5.5) is foamed to a blow ratio of 3:1 and over printed through a 50 mesh rotary screen printer on the wet foam-dye applied polyester knit. The knit fabric is then dried and thermosoled at 177°C for color fixation to produce special over printing effects.

Example VI

A foamable composition containing 4 parts Rapidogen Red KB®, 1 part caustic (50% soln.) and 95 parts of an alkaline foamable composition containing 3.5% 309—70 acrylic, 90.5% water, 0.5% ammonia and 5.5% 309—59 ammonium stearate (20% soln.) was foamed to a blow ratio of 8:1 and knife coated to a thickness of 0,64 mm on a cotton sheeting sample. The coated sample was then padded at 2,1 bar (wet pick-up 40%). A second sample was foam printed through a 50 mesh rotary screen printer with the same foam.

An acid color developing foam was prepared by dissolving 2 parts acetic acid and 2 parts formic acid in 96 parts of a foamable composition containing 1.5 parts Unamide N-72—3®, 0.75 parts QP-52000® and 97.75 parts water, and foaming to a 10:1 blow ratio. This foamed composition was coated to a thickness of 0,64 mm onto each of the above-referred to wet samples. The samples were then vacuumed from the back to collapse the foam and then steamed at 99°C to remove acid vapor and water. The color was developed and demonstrated good fixation. The printed fabric had excellent definition.

When the printed wet samples were developed by conventional padding through a formic/acetic acid mixture, there was color bleeding and the resulting prints had flushing.

Example VII

A foamable prewetting composition containing 0.5 parts Valdet 4016® and 94.5 parts water was prepared. The composition was foamed to a 10:1 blow ratio and 0,64 mm of foam was coated on a cotton velour upholstery material and padded. On the prewetted material direct dye foam was applied as follows:

A dye composition containing 1 part direct dye-Sirius Supra Blue 2RL® and 99 parts of a mix containing 3.5% Valthick-70®, 0.5% aqua ammonia, 90.5% water and 5.5% Am. stearate (20%) was foamed to 6:1 blow ratio. Then 1,27 mm of the foam was coated wet-on-wet on the foam prewetted sample and the so treated sample was vacuumed and padded. The sample was then steamed for 7 minutes at 99°C and dried at 104°C.

Uniform dyeings were obtained on the cotton fabric having good color fastness.

Example VIII

A 10% solution of procion Red MX 5B® reactive dye in water was prepared. The dye solution was applied to a cotton carpet pile in a random pattern.

An alkaline composition containing 2 parts sodium hydroxide (50% soln.) and 98 parts of a mix containing 3.5% Valthick-70® (an acrylic acid polymer emulsion), 0.5% ammonia, 90.5% water and 5.5% Am. stearate (20%) was prepared. This composition was foamed to a 6:1 blow ratio and 1,27 mm of foam was knife coated on the aforementioned carpet pile having reactive dye applied. The carpet was vacuumed from the back side and padded.

Then for reactive dye fixation, the sample was wet stored for 4 hrs. and dried at 104°C. The randomly applied color had good penetration inside pile.

Example IX

A foamable composition consisting of 3.5 parts of Valthick-70® (an acrylic acid emulsion polymer), 0.5 parts of aqua ammonia, 5.5 parts of a 20% solution of ammonium stearate and 90.5 parts of water was prepared.

To 95 parts of this foamable composition was added 3 parts Naphthol AS® (C.I. Azoic Coupling component 2) and 2 parts of 50% sodium hydroxide. This mixture was mechanically foamed to an 8 to 1 blow ratio and knife coated onto cotton print cloth to a thickness of 0,25 mm. The fabric was then padded at 2,1 bar.

A second foamable composition consisting of 1.5 parts of Valdet CC® (a fatty acid diethanolamide manufactured by Valchem), 0.75 parts of Cellosize QP 52000® (a hydroxyethyl cellulose manufactured by Union Carbide) and 97.75 parts of water was prepared.

To 90 parts of this second foamable

composition was added 8 parts of Fast Scarlet 2G® salt (C.I. Azoic Diazo Component 3) and 2 parts of acetic acid. The composition was mechanically foamed to an 8 to 1 blow ratio and a 0,25 mm coating was applied to the wet fabric samples previously coated with the first composition. The sample was padded at 2,1 bar and exposed to air for 3 minutes.

The fabric was then dried. The dried fabric was soaped to remove the uncoupled components. Good color development was achieved.

Example X

A first foamable composition consisting of 3.5 parts of Acrysol ASE-60® (an acrylic acid emulsion polymer manufactured by Rohm and Haas), 0.5 parts of aqua ammonia, 5.8 parts of a 20% solution of ammonium stearate and 90.2 parts of water was prepared.

To 100 parts of the foamable composition was added 6 parts of Sodyesul Liquid Blue 4BGCF® (C. I. Leuco Sulfur Blue 13) and 6 parts of Sodified B® (a solution of sodium sulfide manufactured by Southern Dyestuff Company) and 3 parts of soda ash.

The composition was mechanically foamed to a 6 to 1 blow ratio. 1,27 mm of the foamed composition was then knife coated onto a cotton corduroy fabric. The coated fabric was passed over a vacuum slot and then padded at 2,1 bar.

A second fabric sample was coated with 0,64 mm of the foamed composition and padded only.

Both samples were steamed at 99°C for 5 minutes.

A foamable oxidizing composition consisting of 1 part of Valdet CC®, 1 part of acetic acid, 1 part of 35% hydrogen peroxide solution and 97 parts of water was prepared.

This composition was foamed to a 10 to 1 blow ratio and 5,1 mm of the foam was knife coated onto the previously wet steamed samples. The thus coated fabric samples were passed over a vacuum slot to draw the foam into the fabric. The dye was oxidized.

The samples were then dried. The sulfur dyed cotton corduroys possessed level dyeing and good color fastness properties.

Example XI

A foamable vat pigment composition consisting of 96 parts of the first foamable composition described in Example X and 4 parts of Vat Yellow 4® paste (manufactured by Ciba Geigy) was prepared.

The composition was foamed to an 8 to 1 blow ratio and then knife coated to a thickness of 0,64 mm onto cotton sheeting. The coated fabric was then padded and dried.

A second foamable reducing composition was prepared from 5 parts of 50% sodium hydroxide solution, 3 parts of sodium hydrosulfite, 2 parts of Valdet CC® and 90 parts of water. This composition was then mechanically foamed to an 8 to 1 blow ratio and a 2,54 mm coating applied to the previous vat pigment coated fabric. The fabric was then passed over a vacuum slot and steamed at 99°C for 5 minutes for reduction of vat pigment.

The wet steamed fabric was then oxidized to develop and fix the color by applying the foamed oxidizing composition previously described in Example X. The fabric was then dried. A level dyeing with good fastness properties was obtained.

Claims

1. A process of treating textile materials comprising applying a first finishing agent containing composition to the textile material and applying a second composition in the form of a foam without prior fixation of the first composition and collapsing the foam and fixing the finishing agent, characterized by knife-coating the textile material with the foam layer and subsequently collapsing the foam layer by applying vacuum and/or padding.

2. The process according to claim 1 wherein said first finishing agent-containing composition is also applied to the textile material in the form of a foam and wherein said foam is collapsed prior to application of said later applied second foam composition.

3. The process according to claim 1 wherein said finishing agent is a coloring material, durable press agent, water repellent agent, soil release agent, softener, weighting agent and/or fire retardant agent.

4. The process according to claim 3 wherein said finishing agent in said first composition comprises a coloring material.

5. The process according to claim 2 wherein the coloring material is applied in a pre-selected pattern.

6. The process according to claim 1 characterized in that said first finishing agent containing composition is powdered.

7. The process according to claim 1 wherein said second foamed composition includes an aqueous finishing agent which is prepared by forming a mixture comprised of liquid medium, finishing agent and foaming agent, and foaming the mixture to a blow ratio in the range of from about 2:1 to about 20:1 to produce a foam having a foam density in the range of from about 0.5 gm/cc to about 0.05 gm/cc.

8. The process according to claim 1 wherein said first finishing agent is applied as a foamed printing composition by means of a rotary screen printer or intaglio printing cylinder.

9. The process according to claim 1 wherein said first finishing agent is applied as a foamed printing composition to a pile substrate.

10. A process according to claim 2 characterized in

a) preparing a dye containing composition which includes a reactive material therein;

b) applying said dye containing composition to said textile material;
c) preparing a foamed composition containing therein a material suitable to interact with said reactive material in said dye containing composition;
d) applying said foamed composition to said textile material containing said dye containing composition prior to fixation thereof;
e) collapsing said foamed composition so as to achieve penetration of said dye into said textile material;
f) allowing said reactive material in said dye containing material to interact with the material in said foamed composition; and
g) thereafter drying and fixing the dye in said textile material.

11. A process according to claim 10 characterized in that

a) the first composition includes a reactive dye component and
b) the second foamed composition includes therein the second reactive dye composition, a material suitable to interact with said reactive material in said foamed dye containing composition;
c) applying said second foamed composition to said textile material containing said foamed dye containing composition prior to fixation thereof;
d) collapsing said second foamed composition so as to achieve penetration of said dye into said textile material;
e) allowing said reactive material in said foamed dye containing material to interact with the material in said second foamed composition; and
f) thereafter drying and fixing the dye in said textile material.

12. The process according to claim 10 or 11 wherein said first foamed dye containing composition includes a reactive dye material therein and is applied to a cellulosic fabric and said second foamed composition is alkaline.

Patentansprüche

1. Verfahren zum Behandeln von Textilmaterialien durch Auftragen einer Zusammensetzung, die ein erstes Appreturmittel enthält, auf das Textilmaterial und Auftragen einer zweiten Zusammensetzung in Form eines Schaums ohne vorausgehende Fixierung der ersten Zusammensetzung und Zusammenfallen des Schaums und Fixieren des Appreturmittels, gekennzeichnet durch Rakelbeschichtung des Textilmaterials mit der Schaumschicht und nachfolgendes Zusammenfallenlassen der Schaumschicht durch Anwendung von Vakuum und/oder von einer Druckrolle (padding).

2. Verfahren nach Anspruch 1, dadurch gekennzeichnet, daß die erste Appreturmittel enthaltende Zusammensetzung auch in Form eines Schaums auf das Textilmaterial angewandt wird und daß dieser Schaum kollabiert wird vor Anwendung der später aufgebrachten zweiten Schaumzusammensetzung.

3. Verfahren nach Anspruch 1, dadurch gekennzeichnet, daß das Appreturmittel ein färbendes Material, druckbeständiges Mittel, wasserabweisendes Mittel, schmutzlösendes Mittel, Weichmacher, beschwerendes Mittel oder flammabweisendes Mittel ist.

4. Verfahren nach Anspruch 3, dadurch gekennzeichnet, daß das Appreturmittel in der ersten Zusammensetzung ein färbendes Material ist.

5. Verfahren nach Anspruch 2, dadurch gekennzeichnet, daß das färbende Material in einem vorgewählten Muster aufgetragen wird.

6. Verfahren nach Anspruch 1, dadurch gekennzeichnet, daß die das erste Appreturmittel enthaltende Zusammensetzung fein gemahlen ist.

7. Verfahren nach Anspruch 1, dadurch gekennzeichnet, daß die zweite geschäumte Zusammensetzung ein wäßriges Appreturmittel einschließt, das hergestellt wird durch Bildung einer Mischung aus einem flüssigen Medium, einem Appreturmittel und einem Schäumungsmittel und durch Schäumen der Mischung bis zu einem Blasverhältnis (blow ratio) im Bereich von etwa 2:1 bis etwa 20:1, um einen Schaum herzustellen mit einer Schaumdichte im Bereich von etwa 0,5 g/cm^3 bis etwa 0,05 g/cm^3.

8. Verfahren nach Anspruch 1, dadurch gekennzeichnet, daß das erste Appreturmittel als geschäumte Zusammensetzung zum Bedrucken aufgebracht wird durch einen Drehsiebdrucker (rotary screen printer) oder intagliodruckzylinder.

9. Verfahren nach Anspruch 1, dadurch gekennzeichnet, daß das erste Appreturmittel als geschäumte Zusammensetzung zum Bedrucken aufgebracht wird auf ein Schichtsubstrat.

10. Verfahren nach Anspruch 2, dadurch gekennzeichnet, daß

a) eine Farbstoff enthaltende Zusammensetzung hergestellt wird, die ein reaktives Material beinhaltet;
b) diese Farbstoff enthaltende Zusammensetzung auf ein Textilmaterial aufgebracht wird;
c) eine geschäumte Zusammensetzung hergestellt wird, die ein geeignetes Material enthält, um mit dem reaktiven Material in der Farbstoff enthaltenden Zusammensetzung zu reagieren;
d) die geschäumte Zusammensetzung auf das Textilmaterial aufgebracht wird, das die Farbstoff enthaltende Zusammensetzung enthält, vor Fixierung;
e) man die geschäumte Zusammensetzung kol-

laborieren läßt, um die Penetration des Farbstoffs in das Textilmaterial zu erreichen;
f) das reaktive Material in dem Farbstoff enthaltenden Material mit dem Material in der geschäumten Zusammensetzung zusammenwirkt; und
g) der Farbstoff in dem Textilmaterial getrocknet und fixiert wird.

11. Verfahren nach Anspruch 10, dadurch gekennzeichnet, daß

a) die erste Zusammensetzung eine reaktive Farbstoffkomponente einschließt und
b) die zweite geschäumte Zusammensetzung die zweite reaktive Farbstoffzusammensetzung einschließt, ein Material, das geeignet ist, mit dem reaktiven Material zusammenzuwirken in der geschäumten Farbstoff enthaltenden Zusammensetzung;
c) die zweite geschäumte Zusammensetzung auf das Textilmaterial aufgetragen wird, das die geschäumte Farbstoff enthaltende Zusammensetzung enthält vor der Fixierung;
d) die zweite geschäumte Zusammensetzung kollabiert, um die Penetration des Farbstoffs in das Textilmaterial zu erreichen;
e) das reaktive Material in dem geschäumten Farbstoff enthaltenden Material zusammenwirkt mit dem Material in der zweiten geschäumten Zusammensetzung; und
f) der Farbstoff in dem Textilmaterial getrocknet und fixiert wird.

12. Verfahren nach einem der Ansprüche 10 oder 11, dadurch gekennzeichnet, daß die erste geschäumte Farbstoff enthaltende Zusammensetzung ein reaktives Farbstoffmaterial einschließt und auf ein cellulosisches Gewebe aufgetragen wird und daß die zweite geschäumte Zusammensetzung alkalisch ist.

Revendications

1. Procédé de traitement de matières textiles comprenant l'application d'une première composition contenant un apprêt sur la matière textile et l'application d'une seconde composition sous forme d'une mousse sans fixation préalable de la première composition, l'écrasement de la mousse et la fixation de l'apprêt, caractérisé en ce qu'on enduit au couteau la matière textile d'un couche de mousse, puis qu'on écrase la couche de mousse en appliquant un vide et/ou un placage.

2. Procédé selon la revendication 1, caractérisé en ce que la première composition contenant un apprêt est aussi appliquée à la matière textile sous forme de mousse et que la mousse est écrasée avant application de la seconde composition de mousse appliquée ensuite.

3. Procédé selon la revendication 1, caractérisé en ce que l'apprêt est une matière colorante, un agent d'impression durable, un agent hydrofuge, un agent rejetant les salissures, un assouplissant, un agent de lestage et un agent ignifugeant.

4. Procédé selon la revendication 3, caractérisé en ce que l'apprêt contenu dans le première composition est une matière colorante.

5. Procédé selon la revendication 2, caractérisé en ce que la matière colorante est appliquée selon un motif pré-sélectionné.

6. Procédé selon la revendication 1, caractérisé en ce que la première composition contenant un apprêt est en poudre.

7. Procédé selon la revendication 1, caractérisé en ce que la seconde composition sous forme de mousse comprend un apprêt aqueux et est préparée par formation d'un mélange composé d'un milieu liquide, d'un apprêt et d'un agent producteur de mousse et mise de ce mélange sous forme de mousse jusqu'à un taux de soufflage dans la gamme d'environ 2:1 à 20:1, de façon à produire une mousse ayant un poids spécifique dans la gamme d'environ 0,5 g/ml à 0,05 g/ml.

8. Procédé selon la revendication 1, caractérisé en ce que le premier apprêt est appliqué sous forme d'une composition de mousse d'impression au moyen d'un cylindre imprimeur à trame ou d'un cylindre imprimeur en creux.

9. Procédé selon la revendication 1, caractérisé en ce que le premier apprêt est appliqué sous forme d'une composition de mousse d'impression, sur un substrat à poils.

10. Procédé selon la revendication 2, caractérisé en ce que:

a) on prépare une composition contenant un colorant, incluant une matière réactive;
b) on applique cette composition contenant le colorant sur la matière textile;
c) on prépare une composition mise sous forme de mousse contenant une matière susceptible de réagir avec la matière réactive contenue dans la composition renfermant le colorant;
d) on applique cette composition mise sous forme de mousse sur la matière textile contenant la composition renfermant le colorant avant fixation de celle-ci;
e) on écrase la composition sous forme de mousse pour faire pénétrer le colorant dans la matière textile;
f) on laisse réagir la matière réactive de la composition contenant le colorant, avec la matière contenue dans la composition mise sous forme de mousse; et
g) ensuite, on sèche et fixe le colorant dans la matière textile.

11. Procédé selon la revendication 10, caractérisé en ce que:

a) la première composition comprend un composant colorant réactif et
b) la seconde composition mise sous forme de mousse comprend la seconde composition

de colorant réactif, une matière susceptible de réagir avec la matière réactive contenue dans la composition contenant un colorant, mise sous forme de mousse;

c) on applique la seconde composition sous forme de mousse sur la matière textile contenant la composition sous forme de mousse contenant le colorant avant fixation de celle-ci;

d) on écrase la seconde composition sous forme de mousse de façon à faire pénétrer le colorant dans la matière textile;

e) on laisse la matière réactive de la composition sous forme de mousse contenant le colorant réagir avec la matière contenue dans la seconde composition sous forme de mousse; et

f) ensuite on sèche et l'on fixe ls colorant dans la matière textile.

12. Procédé selon la revendication 10 ou 11, caractérisé en ce que la première composition contenant le colorant mise sous forme de mousse, inclut une matière colorante réactive et qu'elle est appliquée sur un tissu cellulosique et que la seconde composition sous forme de mousse est alcaline.

FIG. 1

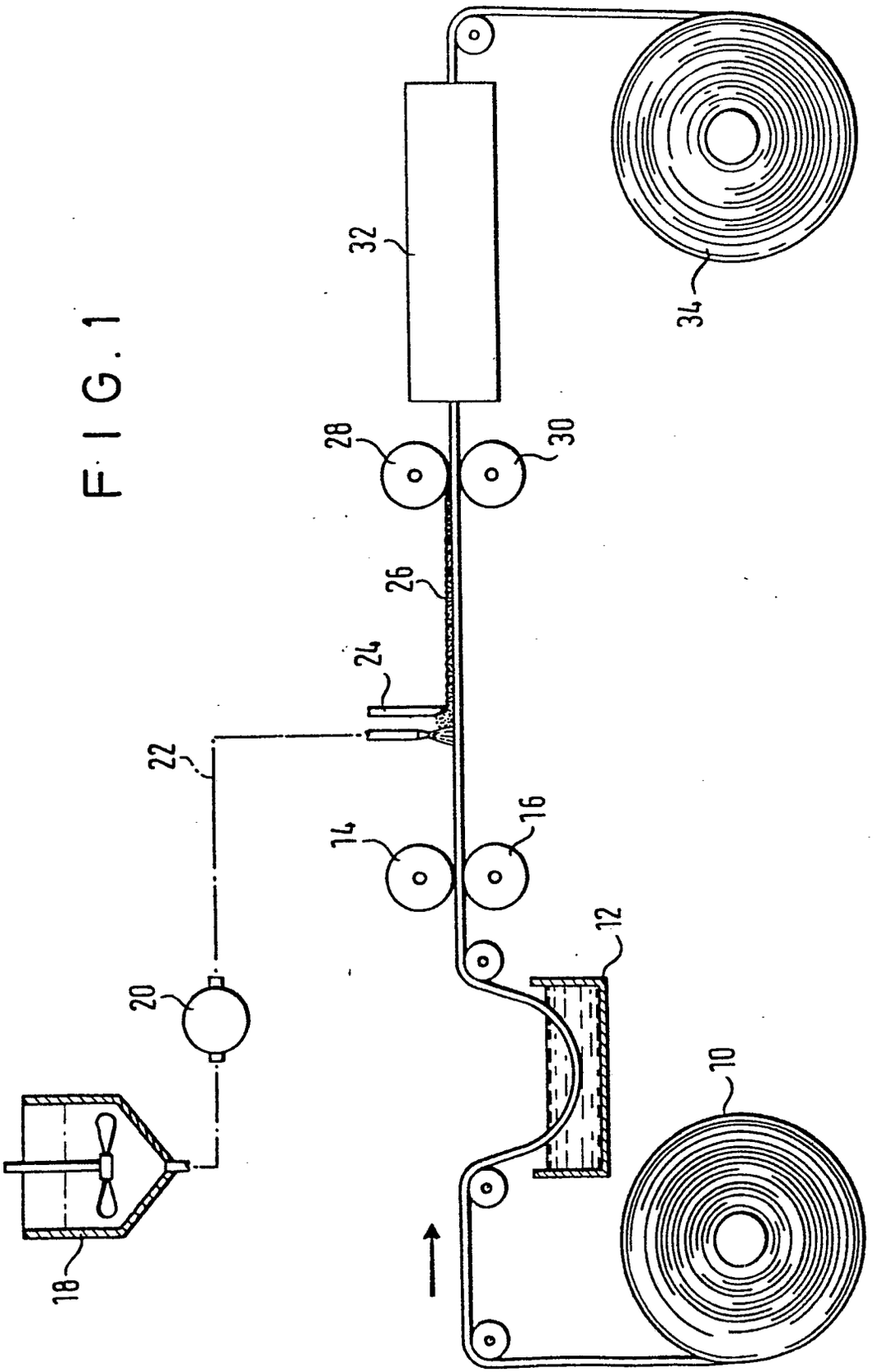

FIG. 2