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(54) Method for producing pattern on denim product.

(57) Methods for producing a pattern on denim products are disclosed. Patterns may be drawn with either a bleach inhibiting agent or a bleach promoting agent in the forms of a solution or paste. In case the pattern is drawn with a bleach inhibiting agent, the denim product is subjected to bleaching by scrubbing in a rotating drum with a plurality of pumices impregnated with a bleaching solution, such as, calcium hypochlorite; or bleaching by immersion and agitation in a bleaching solution. The pattern may remain in dark blue in contrast with the other portions. In case the pattern is drawn with a bleach promoting agent, the denim product is immersed and agitated in a bleaching solution; and the pattern may be produced as the portion where the pattern was drawn is decolorized faster than the other portions.

Fig. 1

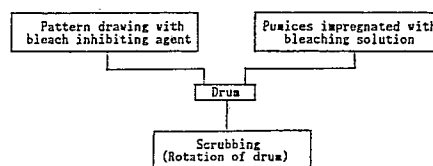


Fig. 2

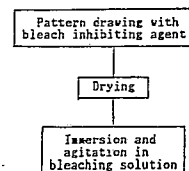
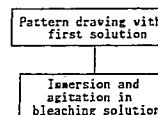


Fig. 3



Description

Method for Producing Pattern on Denim Product

Field of Art

The present invention relates to methods for producing a pattern on a denim product including woven fabric and raw cloth, such as a pair of trousers and jackets, etc.

Background of the Invention

Denim products (or blue jeans) are in fashion these days as trousers or jackets. They are made of relatively thick fabrics, either twilled or flatly woven with dark blue threads as weft, and white threads as warp.

In order to produce a pattern on these products by means of the so-called "Chemical Wash Method", the fabrics are put into a drum along with a plurality of pumices impregnated with a bleaching solution, such as, calcium hypochlorite solution. And, as the drum is rotated, the denim products are scrubbed with the pumices, thereby creating the so-called "pepper-and-salt", mottled pattern on the scrubbed portions. On the other hand, in accordance with the so-called "Chemical Bleach Method", such fabrics are immersed and agitated in a bleaching solution, such as, calcium hypochlorite solution for a prescribed period of time, thereby decolorizing (or bleaching) the fabric as a whole.

As mentioned above, the conventional pattern given to the denim products obtainable by the Chemical Wash Method is constituted by a multitudes of mottles which are irregularly situated all over the fabric. Moreover, the latter Chemical Bleach Method is simply capable of decolorizing the whole fabric uniformly. Thus, the conventional pattern producing method is incapable of freely generating unique and individual patterns (or designs) on denim products.

Summary of Invention

The present invention is in the first place a method for producing a pattern on a denim product comprising the steps of:

drawing a desired pattern on the denim product with a bleach inhibiting agent;
putting said product into a drum with a plurality of pumices impregnated with a bleaching solution; and
rotating said drum for a prescribed period of time; whereby said pattern remains in dark blue in contrast with the other portion as result of the scrubbing between the denim product and the pumices.

The present invention is secondly a method for producing a pattern on a denim product comprising the steps of:

drawing a desired pattern on the denim product with

a bleach inhibiting agent;
drying said denim product; and
putting it in a bleaching solution and agitating it for a prescribed period of time;
whereby the portion where the pattern has been drawn remains in dark blue in contrast with the other portion.

What can be used as the bleach inhibiting agent includes a paste-like material including albumen or yolk or mixture thereof; or paste itself (or starch); or wax, which can provide resistance to the bleaching function of the bleaching solution.

The bleaching solution may be selected from the group of calcium hypochlorite, sodium hypochlorite and potassium permanganate, etc. The appropriate concentration of such a bleaching solution is well known in the industry.

In the above-mentioned second method, in order to prolong the retention of the bleach inhibiting agent with the fabric immersed in the bleaching solution, it is useful, after drying the denim product, to apply a coating on the pattern comprising principally albumen. For the same purpose, the bleach inhibiting agent may include paint (water-soluble or oil-soluble).

On the other hand, if the bleaching solution includes acetic acid, the rate of bleaching of the bleaching solution may be increased substantially; and the necessary bleaching may be accomplished in a shorter period of time. Then, applying additional coating or inclusion of paint in the agent as mentioned above, may be done away with.

The present invention is thirdly a method for producing a pattern on a denim product comprising the steps of:

drawing a desired pattern on the denim product with a first solution which is a mixture of varnish and alcohol;

putting said denim product in a second bleaching solution and agitating it for a prescribed period of time;

whereby the portion where the pattern has been drawn may be decolorized faster than the other portion.

The first solution functions to promote the bleaching of the portion where the solution has been applied to make said portion whiter than the rest.

If the third method includes the step of drawing a pattern on the denim product with a solution or paste-like material including a bleaching agent before or after drawing the pattern with the first solution, the portion where the pattern has been drawn additionally may be made even whiter than the portion where the pattern was drawn with the first solution.

It is to be understood that the methods of this invention may be used in combination on the same product.

The present invention also provides a paste-like material for inhibiting bleach of denim products when applied thereon including albumen or yolk or

mixture thereof; and a mixture solution of varnish and alcohol for promoting bleach of denim products when applied thereon. The paste-like material may preferably be mixed in alcohol (ethyl or methyl), since alcohol functions to enhance penetration of the agent into the denim fabric; and it also functions as an antiseptic. If necessary, additional antiseptics may be added.

A desired pattern may be drawn by means of a brush or so-called "screen painting" depending upon the hardness (or viscosity) of the bleach inhibiting or promoting agents. In order to change the hardness and/or reduce the cost of the agents, fillers in the form of powder, such as, wheat flour, pulverized egg shells or ashes may preferably be added.

Needless to say, the denim products thus given patterns are to be washed; dried; and pressed to render them in their final forms.

Brief Description of Drawings

Figs. 1 to 3 are block diagrams showing three different methods of pattern producing according to the present invention, respectively.

Figs. 4 and 5 show denim products which have been given patterns according to the first and second methods of the present invention.

Figs. 6 and 7 illustrate how a desired pattern may be produced according to the third method of the present invention.

Example 1

As shown in Fig. 4, the pattern m was drawn on a pair of trousers 1 with a brush (not shown) utilizing foamed albumen (or egg white) as a bleach inhibiting agent. 25 pairs of the trousers thus given the pattern were put into a drum. A prescribed amount of pumices (about 40 kg) impregnated with a calcium hypochlorite solution (effective chlorine 12 %) were then put into the drum. The drum was rotated for about 15 minutes at 30 r.p.m. clockwise and counter-clockwise.

As result of the scrubbing of the fabric with the pumices, those portions excepting the portions where the pattern was drawn became pepper-and-salt; however, the portions where the pattern was drawn as above-mentioned remained in dark blue in striking contrast as shown in Fig. 4.

Example 2

As shown in Fig. 5, the pattern n was drawn on a jacket 2 with a brush (not shown) utilizing, as a bleach inhibiting agent, a solution of paste made from wheat flour. 20 jackets thus given the pattern were put into a drum. A prescribed amount of pumices (about 35 kg) impregnated with a calcium hypochlorite solution were then put into the drum. The drum was rotated for about 20 minutes (44

r.p.m) clockwise and counter-clockwise.

As result of the scrubbing of the fabric with the pumices, those portion excepting the portions where the pattern was drawn became pepper-and-salt; however, the portions where the pattern was drawn remained in dark blue in striking contrast as shown in Fig. 5. Similar results were obtained using yolk (or egg yellow), or a mixture of albumen and yolk, or wax as the bleach inhibiting agent.

Example 3

As shown in Fig. 4, the pattern m was drawn on a pair of trousers 1 by means of a so-called "screen painting" utilizing, as the bleach inhibiting agent, a paste prepared by mixing and agitating albumen and pulverized egg shells with wheat flour and about 10% (by weight) water-soluble paint (color: blue) in an industrial alcohol.

The produce was dried in a drier for a pre scribed period of time. Taking the product out from the drier, a coating agent comprising 100% albumen was applied to the pattern and the product was dried again.

After drying, the product was put into a 6 % (by volume) solution of calcium hypochlorite and agitated for about 7 minutes.

As a result, the fabric as a whole was decolorized in white; but those portions where the pattern was drawn remained in dark blue in striking contrast with the other portions as shown in Fig. 4.

Example 4

As shown in Fig. 5, the pattern n was drawn on a jacket 2 with a brush (not shown) utilizing a paste having an appropriate hardness prepared by mixing and agitating albumen and pulverized egg shells with wheat flour in an industrial alcohol added with about 10% water-soluble paint (color: green). The product was dried in a drier for a prescribed period of time.

Taking the product out from the drier, a coating agent comprising 95% albumen and 5% gelatine was applied to the pattern and the product was dried again.

After drying, the product was put into a 7 % solution of calcium hypochlorite and agitated for about 10 minutes.

As a result, the fabric as a whole was decolorized in white; but those portions where the pattern was drawn remained in dark blue in striking contrast with the other portions as shown in Fig. 5.

Example 5

As shown in Fig. 6, the pattern p was drawn on a jacket 2' of denim with a brush 3 utilizing a first solution 4 which is a mixture of varnish and alcohol with a ratio of approximately 1 to 1.

Next, the jacket 2' was put into a second solution comprising water (1 part), calcium hypochlorite (0.015 to 0.10 part) and acetic acid (0.002 to 0.07

part); and agitated for a prescribed period of time (2 to 6 minutes). The concentration of acetic acid itself was 60.05 %. Those portions where the first solution 4 was applied were decolorized faster than the rest, thereby producing the desired pattern.

Thereafter, the product 2' was taken out; washed and dried to obtain a final product shown in Fig. 7.

It is to be noted that as the proportion of alcohol becomes larger relative to varnish, it becomes easier to draw a pattern; however, if it becomes too large, a clear pattern drawing will become difficult. On the other hand, if the proportion is reversed, the resultant pattern may be made clearer; however, it should be noted that the initial pattern drawing could become somewhat difficult. Thus, the proportion should be adjusted between about 30 to 70 %.

The addition of acetic acid in the second solution of calcium hypochlorite serves to accelerate the decolorization; as the amount of acetic acid is increased, the desired decolorization will be accomplished quicker. However, since too much acetic acid will cause the resultant denim products to discolor to an undesirable degree, the amount of acetic acid should be adjusted within about 10%. Furthermore, the addition of acetic acid may be done away with.

The denim products are to be agitated in the bleaching solution as above mentioned for about 2 to 8 minutes. The resultant shade of pattern may be clearer when subjected to agitation for a shorter time. If subjected to agitation for a longer time, the pattern will tend to become dimmer; and it is to be noted that the fabric itself could be damaged.

Example 6

A paste-like material was prepared by mixing and agitating albumen and a paste made from wheat flour with a proportion of 1 vs 0.5.

Example 7

A paste-like material was prepared by mixing and agitating 1.00 yolk, 0.60 albumen and 0.40 wheat flour paste.

Example 8

A paste-like material was prepared by mixing and agitating 0.375 yolk, 0.25 albumen, 0.125 pulverized egg shells and 0.25 wheat flour paste.

The paste-like materials as shown in Examples 6 to 8 were found useful as the bleach inhibiting agents to be used in the present invention, although the agent in Example 7 produced somewhat dimmer design in comparison with the other Examples.

Claims

(1) A method for producing a pattern on a denim product comprising the steps of:

drawing a desired pattern (m, n) on the denim product (1, 2) with a bleach inhibiting agent; putting said product into a drum with a plurality of pumices impregnated with a bleaching solution; and

rotating said drum for a prescribed period of time;

whereby said pattern remains in dark blue in contrast with the other portion as result of the scrubbing between the denim product and the pumices.

(2) A method for producing a pattern on a denim product comprising the steps of: drawing a desired pattern (m, n) on the denim product (1, 2) with a bleach inhibiting agent; drying said denim product; and putting it in a bleaching solution and agitating it for a prescribed period of time;

whereby the portion where the pattern has been drawn remains in dark blue in contrast with the other portion.

(3) The method of claim 1 or 2 wherein the bleach inhibiting agent comprises a paste-like material including albumen or yolk or mixture thereof.

(4) The method of claim 1 or 2 wherein the bleaching solution includes acetic acid.

(5) The method of claim 2 further including, after the drying step of the denim product, the steps of coating the portion where the pattern was given by a coating agent comprising principally albumen, and drying the denim product.

(6) The method of claim 3 wherein the paste-like material includes paint.

(7) A method for producing a pattern on a denim product comprising the steps of: drawing a desired pattern (p) on the denim product (2') with a first solution (4) which is a mixture of varnish and alcohol; putting said denim product in a second bleaching solution and agitating it for a prescribed period of time;

whereby the portion where the pattern has been drawn may be decolorized faster than the other portion.

(8) The method of claim 7 further including the step of drawing a pattern on the denim product with a solution or paste-like material including a bleaching agent before or after drawing the pattern with the first solution.

(9) The method of claim 7 or 8 wherein the proportion of varnish and alcohol in the first solution is about 1 to 1.

(10) The method of claim 7 or 8 wherein the second solution includes acetic acid.

(11) A paste-like material for inhibiting bleach of denim products when applied thereon including albumen or yolk or mixture thereof.

(12) The material of claim 11 mixed in alcohol.

(13) The material of claim 11 or 12 further including powder filler.

(14) A mixture solution of varnish and alcohol for promoting bleach of denim products when applied thereon.

(15) The solution of claim 14 wherein the proportion of varnish and alcohol is about 1 to 1.

Fig. 1

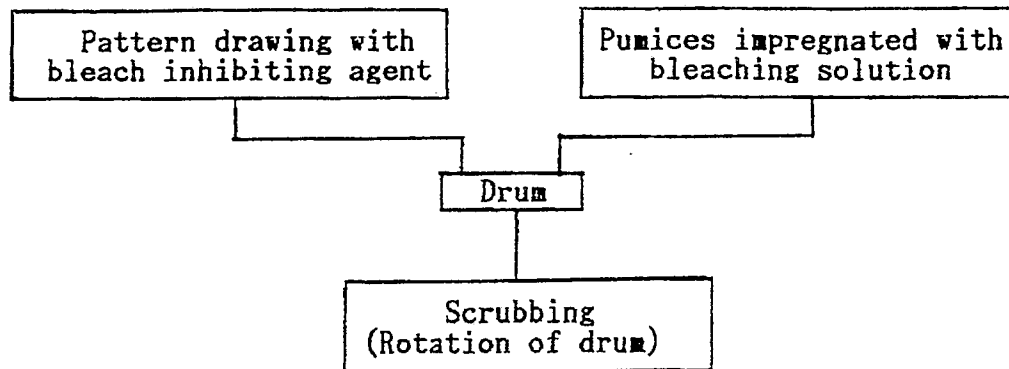


Fig. 2

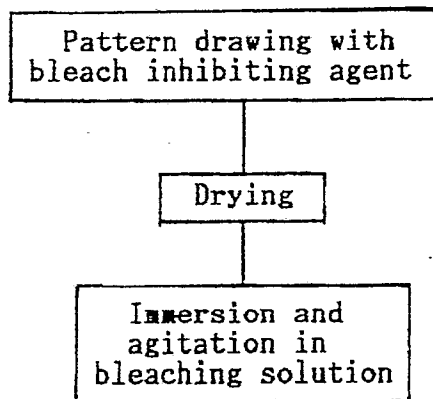


Fig. 3

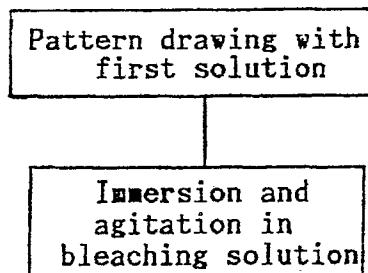


Fig. 4

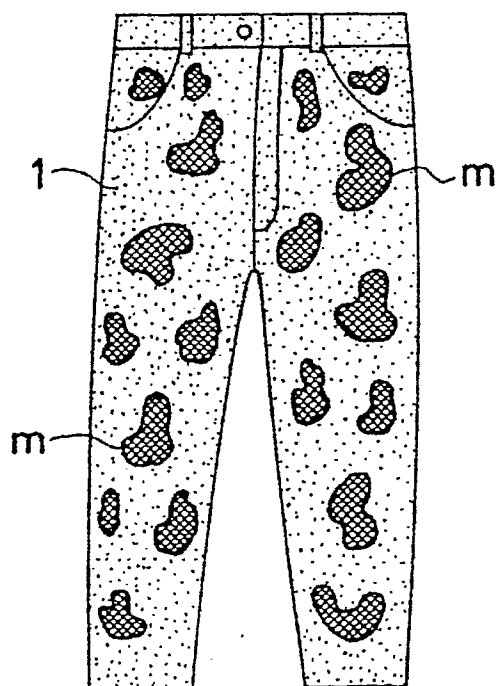


Fig. 5

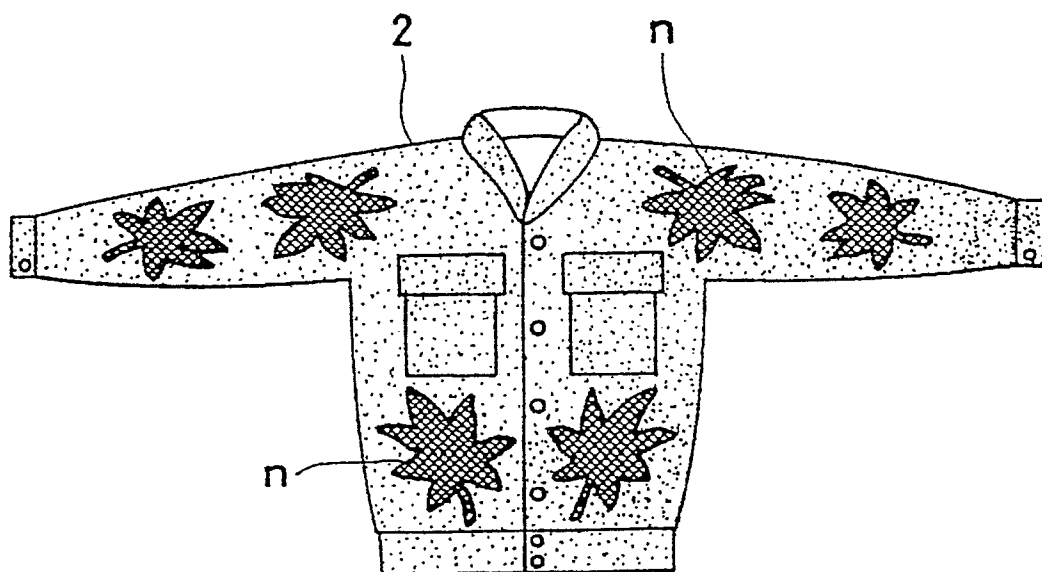


Fig. 6

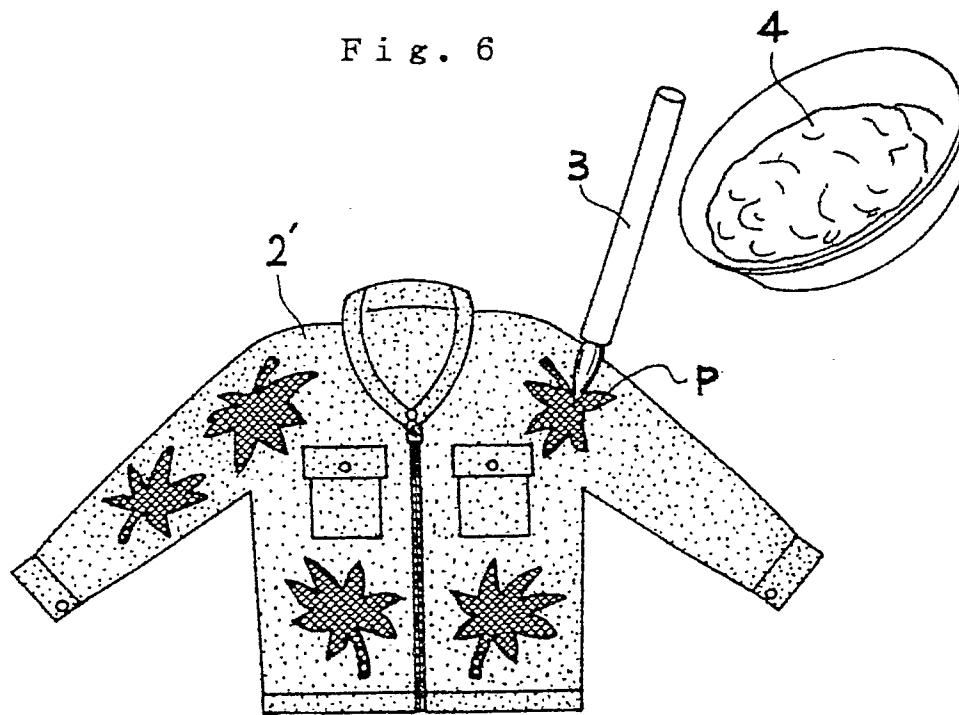


Fig. 7

