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G. HEBERLEIN
TREATING OR FORMING OF SELVAGES FOR TRANSPARENTIZED
AND STIFFENED FABRICS
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Fig. 1.

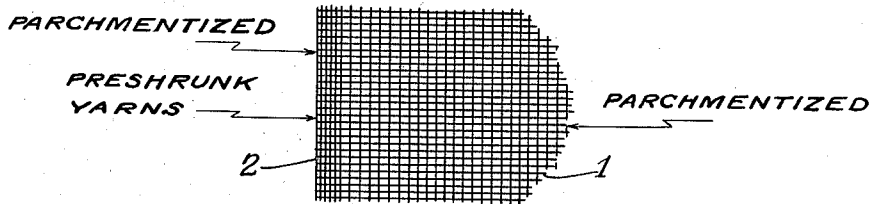


Fig. 2.

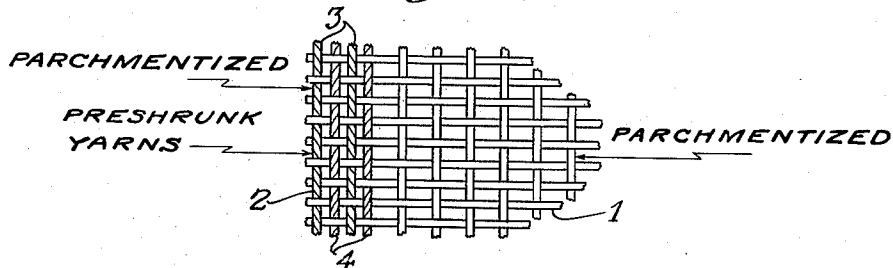


Fig. 3.

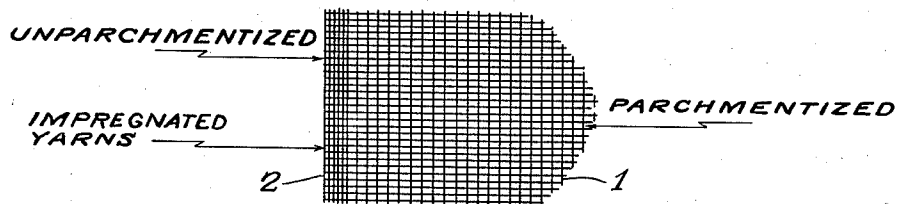
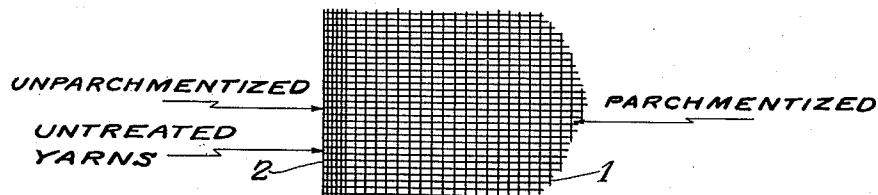


Fig. 4.



INVENTOR.

BY *Ward, Conly & Head*
GEORGES HEBERLEIN.
ATTORNEYS

UNITED STATES PATENT OFFICE

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TREATING OF FORMING OF SELVAGES FOR
TRANSPARENTIZED AND STIFFENED FAB-
RICS

Georges Heberlein, Wattwil, Switzerland, assignor
to Heberlein Patent Corporation, New York,
N. Y., a corporation of New York

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17 Claims. (Cl. 28—1)

This invention relates to the treatment or formation of the selvages of transparentized, stiffened or parchmientized fabrics.

In weaving various forms of fabric, it is customary to provide strengthened edges or so-called selvages, which are made by using heavier and/or more closely spaced warp threads than are used in the remainder of a fabric, so as to protect the edges against tearing, raveling, etc. However, when such fabrics, for example cotton fabrics, having such selvages are treated with swelling agents to cause transparentizing, stiffening or parchmientizing, the various wet treatments involved cause irregular tensions in the fabric piece, which in turn bring about objectionable rolling or curling effects in the finished fabric. At the same time the selvages after drying, will often become extremely hard or excessively stiffened by such treatments. Consequently the fabric at the selvege areas will not only have an unpleasant handle, but may be such as to even cause irritation or injury to the skin of anyone who handles or uses the fabrics.

The objects of the present invention include the provision of relatively simple, inexpensive and dependable processes for so forming or treating the selvages for parchmientized or transparentized fabric, and treating or finishing the fabric in such manner, as to avoid the undesirable curling effects above mentioned, and at the same time if desired, also providing selvages which are relatively soft, and yet are at least as fully effective as the customary selvages for preventing tearing, raveling, etc.

According to the present invention, the selvages of the fabric which is to be subjected to a transparentizing and stiffening treatment with swelling agents, may preferably be so formed or so treated that at least the warp threads in the selvages will consist of preshrunk yarns. Such use of preshrunk yarns in the warp of the selvages has the somewhat surprising and unforeseen result of eliminating the undesirable curling characteristics of the finished transparentized or parchmientized fabric. Furthermore, if desired, according to this invention, the warp yarn of the selvege or the whole selvege edge may be so formed, treated or protected, that the swelling agents used for transparentizing, parchmientizing, etc., will be ineffective, or only partially effective thereon, thus not only avoiding the disagreeable curling effects, but also at the same time providing selvages having a satisfactorily soft and pleasant handle.

Various further objects, features and advantages of the invention will more clearly appear from the following detailed description of several illustrative embodiments of the invention, which are given by way of example only.

The invention consists in the novel processes and process steps hereinafter described by way of examples, and also in the resulting novel products, and will be more particularly pointed out in the appended claims.

As above indicated, one advantageous method for carrying out the invention is to form the fabric edges or selvages with warp yarns, which will not shrink, or shrink comparatively little during the transparentizing and stiffening treatment of the fabric. This may preferably be accomplished by the use of selvages woven partly or entirely of preshrunk yarns. One may employ for example, warp yarns for the selvages which have been treated as follows:

Yarn of 140/2 ply, for example, is first boiled for 40 minutes in a solution containing 2% of soda, plus 1% of Turkey red oil, in order to enhance its property to absorb moisture. Then the moistened yarn is impregnated with caustic soda of 30° Bé. at room temperature for about one minute to cause shrinkage of from 10-12%. Thereafter the caustic soda is removed by washing with hot water, and the yarn neutralized with H_2SO_4 at 1° Bé., rinsed and dried. The desired fabric is then woven using the yarn as prepared above for the warp threads of the selvages. Thereupon the fabric may be treated with swelling agents to provide a desired form of transparentizing process such for example as the following:

The fabric is parchmientized with a sulfuric acid at 54° Bé. at a temperature of 10° C. for 10 minutes, then washed out and in moist condition aftermercerised under tension with a caustic soda of 30° Bé. at 15° C. for 15 seconds. Afterwards the fabric is hot delyed, scoured with sulfuric acid of 1° Bé. washed out and dried under tension.

It will be understood that other yarn preshrinking processes may be used—the above shrinking process being given merely by way of example. The yarns which are to be shrunk as above, may be either bucked and/or bleached, or unbucked and/or unbleached. In the latter event, the fabric after weaving, may be bucked and bleached.

The resulting fabric will be transparentized and stiffened throughout, including the selvages, but with the quite unpredictable result that the

selvages do not cause to any appreciable degree, the undesirable curling or rolling up of the areas at or adjacent the edges.

With this embodiment of the invention, one may if desired, use with advantage for the warp threads in the selvages, yarns which have been preshrunk as above described and which have left and right twists, i. e., alternate threads being twisted to the left and to the right respectively.

The advantages of this method consist in an enhancement of the anti-rolling properties, especially when using thicker twists or yarns.

When it is desired to have the selvages comparatively soft as well as of a character to avoid the curling effects, a fabric which is to be transparentized or parchmented may be so woven that the strengthening selvages at its edges are entirely or partially formed of yarns resistant to, or protected against the swelling agents used in the transparentizing and stiffening process. For example, the warp yarns used for the selvages may be made immune to such swelling agents by the use of formaldehyde as follows:

Cotton yarn is impregnated for about 10 minutes in a solution of

	Cubic centimeters
Formaldehyde 40%	400
Aluminiumthiocyanate of 17° Bé.....	40
Water	560
	1000

at 15° C. Thereupon the solution is squeezed out and the yarn is dried during several hours at 50-60° C. Afterwards the yarn is heated at about 130° C. for 15 minutes and, if desired, is washed out and dried after being soaped with a soap-solution (1g/liter).

Alternatively, such warp yarns may be made resistant to the swelling agents by impregnation with chlorinated rubber, as follows:

Cotton yarn is impregnated with a 20% solution of chlorinated rubber in toluol, squeezed out and dried in the steam-dry-stove.

Since yarns subjected to the formaldehyde or chlorinated rubber treatments above described are also fast against bucking and/or bleaching treatments, the fabric may be produced from unbleached or unbucked yarns and the bleaching and bucking may be done after the fabric is woven.

One may also employ in weaving the selvages, yarns which are merely impregnated with material such as gum arabic and water, but in such event, the yarn should be previously bucked and/or bleached, since otherwise the selvage yarns reserved with gum, would lose their reserves while bleaching or bucking the fabric.

If desired, instead of using specially treated yarns in weaving the selvages as above described, one may use a fabric in which the selvages are woven in the customary way, the selvages thereafter being provided with a suitable reserve, immune or resistant to the swelling agent. That is, for example, one may print a suitable reserve on to the selvages in the form of narrow stripes, impregnating or covering the selvage areas for reducing or preventing the action of the swelling agent thereon. It is possible to print the selvage areas of the fabrics after bucking and bleaching and during the drying thereof on a tentering frame, with one of the known gum reserves such as gum arabic, British gum, or gum traganth, whereby the selvages are amply pro-

tected against the subsequent transparentizing treatment. It is also possible to print a reserve on to the fabric prior to the bucking and bleaching thereof, but in that event it is necessary that the reserve be of such character as to be fast against the bucking and/or bleaching treatments. In this case for example the reserve as printed on may comprise a solution of chlorinated rubber or other lacquer or lacquer-like reserves. Then after the transparentizing treatment, such reserves may be removed with a suitable solvent if the reserve is of such a nature as to impair the handle of the fabric. The selvage edge may also be rendered immune against the transparentizing and also against the bucking and/or bleaching treatments by treating the selvage areas with formaldehyde at higher temperatures, for example, in the presence of acid catalysts, as follows:

	Grams
Formaldehyde 40% solution.....	300
Aluminiumthiocyanate-solution of 17° Bé..	40
British-gum thickener 3:2.....	400
Water	260
	1000

and dried at about 70° C., thereafter heated during 20 minutes at 125° C. and finally washed.

In the accompanying drawing, Figs. 1 to 4, inclusive, illustrate parchmented fabrics wherein curl resistance has been imparted to the selvage in accordance with the various procedures above outlined.

Referring to the drawing, Fig. 1 illustrates a portion of a parchmented fabric in which curl resistance is imparted to the selvage of reinforced weave, by weaving the selvage of preshrunk yarns. The body portion of the fabric is shown at 1 and the selvage at 2. In this modification, the entire fabric including the body 1 and the selvage 2 is parchmented because, in this modification, the selvage is not protected against the action of the parchmentizing agent.

Fig. 2 illustrates a modification similar to Fig. 1, except that the warp threads of the selvage are preshrunk, and are oppositely twisted in the alternate threads as shown at 3 and 4. In this modification also, the entire fabric including the body 1 and the selvage 2 is parchmented.

Fig. 3 illustrates a modification in which the selvage 2 is woven of yarns which have been impregnated to resist parchmentation, for example by pretreatment with formaldehyde or chlorinated rubber solutions in the manner above described. In this modification, therefore, whereas the body portion 1 will be parchmented after the parchmentizing treatment, the selvage 2 will be soft and unparchmented.

Fig. 4 illustrates a modification of the invention in which the selvage is woven of yarns which are not impregnated to resist parchmentation, but in which, after the fabric including the selvage is woven, the selvage is provided with a protective coating prior to parchmentation, as for example, by printing with a removable gum, chlorinated rubber or lacquer reserve, or by applying thereto strips or films of gum material, in the manner above described, which reserve or film is removed after parchmentation, so that the resulting fabric will have a parchmented body 1 and a soft, unparchmented and untreated selvage 2.

The protection for the selvages of the fabric

in the piece against the transparentizing action may also for example be obtained by applying to the selvage areas a strip of film or gum material either pasted on or temporarily held in place by suitable mechanical means. Thin strips of films from polyvinyl- or acryl-artificial resins as examples may be used for this purpose. Finally, one may also treat the fabric in the piece with the transparentizing process in such manner that the selvage edges are so guided or covered with protecting means of such form as to prevent the access of the swelling agent to the selvages.

With all of the above described processes wherein the selvages or yarns thereof are treated with reserves or are otherwise protected against the swelling agents used for transparentizing, the strong action of the swelling agent will be so minimized or prevented in the selvage areas, as to avoid the objectionable curling effects usually encountered with transparentized and stiffened fabric. Also with these embodiments of the invention, after the transparentizing, the selvages will remain with a soft or comparatively soft handle, and free of the parchmmentizing action or relatively free thereof. Yet the selvages will be unusually effective in preventing tearing of the fabric and their soft character will protect the edges of the stiffened areas against possible cutting or injuring the hands or skin of anyone who handles or uses the fabric.

The following is a specific example of the embodiment of the invention involving the treatment of the selvage yarns with a resist prior to weaving the fabric:

Cotton yarn No. 60/80/1 (single) and 140/160/2 (double) is impregnated with a 20% solution of chlorinated rubber in Toluol, squeezed out and dried. The so treated yarns are woven into the warp of the selvages of a voile or muslin fabric, consisting of crude mercerised cotton yarns. Thereupon the fabric is subjected to a usual bleaching process and then parchmmented with a sulphuric acid of 54° Bé. at 15° C. during 10 seconds and washed out. To get an excellent transparent effect, the fabric is mercerized under tension with a caustic soda of 30° Bé. during 20 seconds, hot delyed, soured with sulphuric acid of 2° Bé., washed and dried under tension.

The following is a specific example of the embodiment of the invention involving the treatment of the selvage edge with the reserve after weaving the fabric:

Mercerized bleached cotton voile or muslin is printed at the selvages with a gum resist 1:1, i. e. 1 part gum-arabic to 1 part of water and dried. Thereafter the fabric is subjected to a transparentizing treatment as described in the preceding example.

Instead of parchmmentizing it with sulphuric acid one can parchmmentize it with a 70% solution of calcium-thiocyanate at 105° C. during 15 seconds and finally aftermercerize as described in the preceding example.

While the invention has been described in detail with respect to particular preferred examples, it will be understood by those skilled in the art after understanding the invention that various changes and further modifications may be made without departing from the spirit and scope of the invention, and it is intended therefore in the appended claims to cover all such changes and modifications.

What is claimed as new and desired to be secured by Letters Patent is:

1. A process for producing parchmmented fab-

ric with avoidance therein of curling effects due to differences in tensions of the yarns within and adjacent the selvage, which comprises weaving the fabric, and in so doing, using yarns in the selvage which have been preshrunk to a pronounced degree, and thereafter subjecting the fabric to wet treatments including the action of a swelling agent of such composition and under such conditions as to parchmmentize the fabric.

2. A process for producing parchmmented fabrics with avoidance therein of curling effects due to differences in tensions of the yarns within and adjacent the selvage, which comprises subjecting a fabric to wet treatments including the action of a swelling agent of such composition and under such conditions as to transparentize and stiffen the main body of the fabric, the selvage or at least the warp thereof, being so treated that it is at least relatively less subject to the swelling action of said treatments.

3. A process for producing parchmmented fabric with avoidance therein of curling effects due to differences in tensions of the yarns within and adjacent the selvage, which comprises weaving a fabric, and in so doing, using yarns in the selvage which have been preshrunk to a pronounced degree, the alternate preshrunk yarns being twisted to the right and to the left respectively, and thereafter subjecting the fabric to wet treatments including the action of a swelling agent of such composition and under such conditions as to parchmmentize the fabric.

4. A process for producing parchmmented fabric with avoidance therein of curling effects due to differences in tensions of the yarns within and adjacent the selvage, which comprises treating certain yarns with material to render the same resistant to the action of the swelling agent used for the fabric parchmmentizing treatment, weaving the fabric with a selvage embodying said yarns, and thereafter subjecting the fabric to the action of a swelling agent of such composition and under such conditions as to parchmmentize the main body of the fabric while leaving the selvage embodying said yarns relatively soft.

5. A process for producing parchmmented fabric with avoidance therein of curling effects due to differences in tensions of the yarns within and adjacent the selvage, which comprises treating certain yarns with material to render the same resistant to the action of the swelling agent used for the fabric parchmmentizing treatment, and resistant to the action of bucking and/or bleaching agents, weaving the fabric with a selvage embodying said yarns, and thereafter subjecting the fabric to the action of a swelling agent of such composition and under such conditions as to parchmmentize the main body of the fabric while leaving the selvage embodying said yarns relatively soft.

6. A process for producing parchmmented fabric with avoidance therein of curling effects due to differences in tensions of the yarns within and adjacent the selvage, which comprises applying to the selvage of a woven fabric a material resistant to the action of the swelling agent used for the fabric parchmmentizing treatment, and thereafter subjecting the fabric to the action of a swelling agent of such composition and under such conditions as to parchmmentize the main body of the fabric while leaving said selvage relatively soft.

7. A process for producing parchmmented fabric with avoidance therein of curling effects due to differences in tensions of the yarns within

and adjacent the selvage, which comprises applying to the selvage of an unbleached and/or unbucked woven fabric, a material resistant to the action of the swelling agent used for the fabric parchmentizing treatment, and resistant to the action of bucking and/or bleaching agents, thereafter bucking and/or bleaching the fabric and also subjecting the same to a parchmentizing treatment by the use of a swelling agent.

8. A process for producing parchmented fabric with a selvage edge but with avoidance therein of curling effects due to differences in tensions of the yarn within and adjacent the selvage, which comprises subjecting a fabric to wet treatments including the action of a swelling agent of such composition and under such conditions as to parchmentize the main body of the fabric, while at least the warp of the selvage is relatively protected against the swelling action of said treatments, thereby leaving the selvage relatively soft as compared with the main body of fabric.

9. In the process of producing a cellulose-containing parchmented fabric having a relatively soft selvage with a reinforced weave, the steps which comprise so treating at least the reinforcing threads of the selvage as to form therewith a cellulose formaldehyde compound, subjecting the woven fabric to wet treatments including the action of a swelling agent of such composition and under such conditions as to parchmentize the main body of the fabric while by reason of said compound said threads are to a substantial extent protected from said swelling agent.

10. In the process of producing a cellulose-containing parchmented fabric having a relatively soft selvage with a reinforced weave, and with avoidance of curling effects due to the presence of the selvage, the steps which comprise, so treating at least the reinforcing threads of the selvage as to pre-shrink the same and form there-

with a cellulose formaldehyde compound, subjecting the woven fabric to wet treatments including the action of a swelling agent of such composition and under such conditions as to parchmentize the main body of the fabric while by reason of said compound said threads are to a substantial extent protected from said swelling agent.

11. A fabric having a selvage of reinforced weave of pre-shrunk material and formaldehyde-impregnated in the selvage for imparting resistance to parchmentation and the action of swelling agents.

12. A parchmented fabric having a selvage of reinforced weave, the warp threads of the selvage being pre-shrunk for imparting resistance against curling.

13. A parchmented fabric having a selvage of reinforced weave, the warp threads of the selvage being pre-shrunk and oppositely twisted in the alternate threads for imparting resistance against curling.

14. A curl-resistant fabric having a parchmented body and a substantially unparchmented selvage of reinforced weave.

15. A curl-resistant fabric having a parchmented body and a selvage of reinforced weave resistant to parchmentation and the action of swelling agents.

16. A curl-resistant fabric having a parchmented body and a relatively soft and substantially unparchmented selvage of reinforced weave.

17. A curl-resistant fabric having a parchmented body and a selvage of reinforced weave of pre-shrunk material and formaldehyde-impregnated in the selvage for imparting resistance to parchmentation and the action of swelling agents.

GEORGES HEBERLEIN.