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M. SPERBER

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METHOD OF MANUFACTURING LAMINATED FABRIC

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Fig. 1.

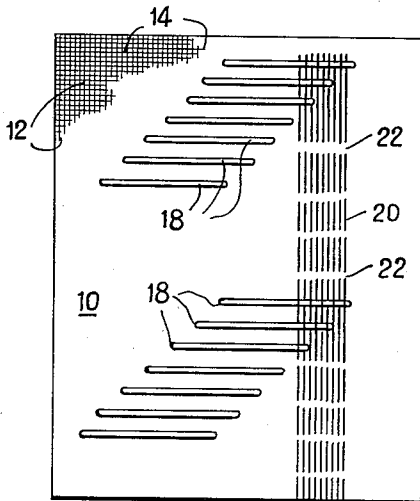


Fig. 2.

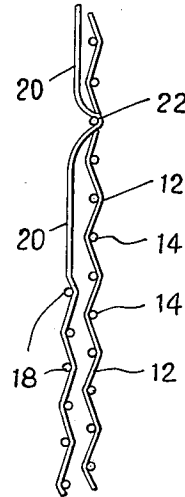
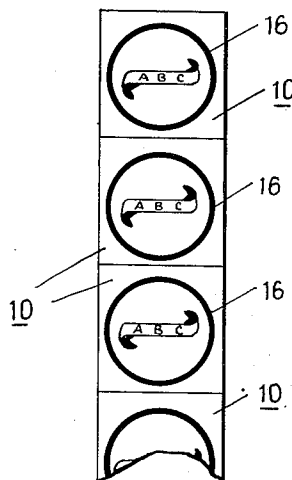


Fig. 3.



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METHOD OF MANUFACTURING LAMINATED FABRIC

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7 Claims. (Cl. 28—1)

This invention relates to a method of manufacturing laminated fabrics, and more specifically to a method of attaching garment labels.

In general, it is an object of the invention to provide a method of the character described, which will efficiently perform the purposes for which it is intended, which is simple and economical, which can be expeditiously, conveniently and safely carried out.

Another object is to eliminate sewing in connection with the securing of one fabric to another in cases where continuous or discontinuous areas of one fabric are to be attached to areas of another fabric, or where a fabric is to be wholly or in part folded back upon, and secured to, itself, e. g., belts and selvages, respectively; and to accomplish these effects by preparing a fabric which is so constructed that it will fuse, on one side only, to another fabric.

Another object of the invention is to provide a method of adhesive attaching a label to a fabric or garment without the use of separately applied adhesive; which method may be utilized during the original formation of the garment without any steps additional to those that are normally carried out in the making of the garment and without interfering with, or harming, the usual garment-making apparatus; which method may be carried out at some period after the garment has been made and without disarrangement of the latter; which method results in the label being so securely attached that the garment may be laundered throughout the life of the garment without the labels being detached; and which method utilizes a label which is prepared by the usual machinery for weaving fabrics; and which label has a front or face which does not differ from labels in general.

Other objects of the invention will in part be obvious and will in part appear hereinafter.

The invention accordingly comprises the several steps and the relation of one or more of such steps with respect to each of the others, which are exemplified in the following detailed disclosure, and the scope of the application of which will be indicated in the claims.

For a fuller understanding of the nature and objects of the invention, reference should be had to the following detailed description, taken in connection with the accompanying drawing, in which:

Figure 1 is a somewhat diagrammatic representation of the back of a piece of fabric embodying one form of the invention;

Fig. 2 is a somewhat diagrammatic representa-

tion, in cross-section, of the fabric shown in Fig. 1; and

Fig. 3 is the view of the front of a fabric of the general type shown in Fig. 1.

This invention contemplates a label which, by the use of a solvent or other softening agent, may, under pressure, and preferably with heat, be caused to adhere permanently to a fabric or garment which may be woven, knitted, or otherwise constructed.

The label or fabric, which is to be applied, is a multiple ply interweave having layers forming substantially a single entity by reason of the weaving at intervals of threads with adjacent layers, into each other. To all intents and purposes, the front of the label appears like any other woven label of the same general type. The back, however, is woven of threads which soften somewhat on the application of a suitable agent such as heat and/or a solvent and/or a plasticizer. Preferred materials for the adhesive threads on the back are cellulose derivatives and especially cellulosic esters such as cellulose acetate and cellulose nitrate. A yarn made of resin may be used for the adhesive threads.

In the joining of fabric layers according to this invention, the soluble, fusible threads may be incorporated into the back face of each layer and the layers attached as described below. Usually, however, it is sufficient if the threads are incorporated into the back face of only one of the fabrics. They may be added as extra threads in the warp or filling or both and in weaving they are thrown into the back of the fabric and interlocked with the face yarn in such a way that they are not visible on the front but do float on the back so that they are available to be pressed into contact with that other fabric to which is to be attached the fabric of which they are a part.

In cases where the final laminated product is to comprise laminations of the same sheet of fabric folded back on itself, the soluble, fusible threads are incorporated on the proper face in the proper pattern. Thus, for selvedge as in draperies, they may be along one edge or in a stripe spaced from the edge by the width of the selvedge and parallel to the edge.

One fabric may have a face of one color and another fabric have a face of a different or contrasting color. By weaving the soluble, fusible threads into the back of one of these fabrics, the way is prepared for joining them back to back to give a reversible product. Difficult weaving problems are thus avoided.

The size of the soluble, fusible threads and filaments will depend on the type of fusing necessary; for example, if an article requires numerous launderings, a larger area of such thread would be required. If an article does not require laundering, but only dry cleaning, a smaller percentage is required.

In the drawing, 10 denotes a piece of fabric such as a label made of the usual warp and woof threads, 12 and 14, which may be white. Interwoven with these are certain threads which may be colored and which appear on the front of the label at predetermined points 16. These points 16 may form a design, e. g., a trademark or name (see Fig. 3). Any one colored thread is carried on the back between those points at which it is to be interwoven with and show through on the front. It may be carried on the back for as far as a half an inch or more, depending upon the design, the size of the thread, and so on. The carried portion of a thread is known as a float and, unless it is too long, the float itself is not interwoven with the main fabric. These floats 18 may be distinguished in Figs. 1 and 2 of the drawing from the adhesive threads 20, the former being shown somewhat larger than the latter.

The cellulosic ester threads 20 are interwoven with the floats 18 and, in those cases where such floats are present, the former are not otherwise attached to the main body of the fabric. Thus, in some cases where there are many or large float areas, the adhesive thread may be secured practically entirely to them. Usually, the floats run in only one direction, i. e., with the warp or with the woof, the adhesive thread running in the other direction. The floats and the adhesive may run in both directions.

Certain areas may have no floats. It then becomes necessary, once in a while, to tie the adhesive threads occasionally into the main fabric. If they are running in the warp direction, they may be caught into predetermined woof threads, for example every twentieth or fortieth woof thread, as at 22 in Figs. 1 and 2, along with the regular warp thread at that point. They are normally indistinguishable against the front of the fabric at these points, especially if they are caught in tightly and between the main warp and woof threads at those points. As they are softened later in the process, by the application of a solvent or other softening agent, the adhesive threads at these points are either present in such relatively small amounts, or they tend under the tension of the weave to so pull toward the back, that there is no adhesive on, nor any adhesive by, the front of the fabric.

Certain extra ones of the warp or woof threads may be arbitrarily carried behind the main fabric and serve to be interwoven with the adhesive threads.

The adhesive threads may be incorporated with the main fabric in such areas as may be desirable. In Fig. 1, they are shown extending as stripes spaced from one edge so that the latter may be folded back against and secured to the stripe to form a selvedge. Certain areas of a fabric may be similarly prepared for attaching appliqué thereon.

The fabric or label is applied to the other fabric at any convenient time. When the label is to be attached to the collar band of a shirt, for example, it is pressed to the band at the time when the band would normally be pressed, whether or not the label were to be added.

A softening agent such as any well known sol-

vent, e. g., acetone, ethyl lactate or glacial acetic acid, is applied to the back of the especially made fabric, e. g., label, just prior to its being pressed against the other fabric, e. g., collar band. Only sufficient solvent or softening agent is used to soften the acetate thread. These agents do not dissolve wool, cotton, linen, or rayons, such as viscose, cuprammonium, etc. The latter, under the pressure, does not press through the threads of the front ply or layer of the label nor through the material of the collar band. Heat may be present advantageously at the time of pressing to facilitate the evaporation of excess solvent.

The woven ply of acetate thread, mechanically interattached to the front of the label, attains a permanent union between the label and the shirt. Every attached label which has been tested has been found to remain firmly fixed to the shirt, despite repeated washing in a commercial laundry, until after the material of the shirt, not near the label, has begun to disintegrate. It is known to the art that a label attached by a thermoplastic coating will not remain attached for more than a very few washings—many less than are required to break down shirt material.

When the second fabric, to which the especially woven first fabric or label is to be attached, is itself made in whole or in part of thread which the solvent will attack, the first fabric may be positioned in a weak or dilute solution of the solvent, in the nature, say, of fifty to sixty percent, for a length of time sufficient to soften threads in the back of the first fabric. Then the latter may be pressed with heat against the former. The solvent evaporates away before it can harm the former.

Different garment retailers require different labels to be put into garments which are otherwise the same. Manufacturers in slack retail seasons must stock up for the busy retail seasons. Labels, which must be sewn in, have to be attached before the garment is finally ironed, finished and folded. Thereafter, the manufacturer is at the mercy of the retailer whose label has been sewn on. The labels made in accordance with the present invention, on the other hand, can be quickly, adhesively, and permanently attached whenever desired, and without disarranging the garment.

Since certain changes in carrying out the above process, which embodies the invention may be made without departing from its scope, it is intended that all matter contained in the above description or shown in the accompanying drawing shall be interpreted as illustrative and not in a limiting sense.

It is also to be understood that the following claims are intended to cover all of the generic and specific features of the invention herein described, and all statements of the scope of the invention which, as a matter of language, might be said to fall therebetween.

Having described my invention, what I claim as new and useful and desire to secure by Letters Patent is:

1. In a method of the character described, the combination comprising forming a multiple ply fabric so that the layers thereof form substantially a single entity by incorporating threads, at intervals, from one of the layers into another and forming said other of said layers of a cellulose derivative, applying a solvent to the other of said layers until said other layer is sufficiently attacked by said solvent that it loses its fabric form upon the application of pressure and heat, and pressing said fabric against a surface, with

said other layer immediately against said surface, with a pressure insufficient to press said softened layer through said one layer.

2. The method, of attaching a label to a garment, comprising forming a label of a multiple ply fabric, with a derivative of cellulose as the rear ply, applying a solvent to said rear ply until said rear ply is sufficiently attacked by said solvent that it loses its fabric form upon the application of pressure and heat, and pressing said label against a garment.

3. The method, of attaching a label to a garment, comprising forming a label of a multiple ply fabric, with a derivative of cellulose as the rear ply, applying a solvent to said rear ply until said rear ply is sufficiently attacked by said solvent that it loses its fabric form upon the application of pressure and heat, and pressing said label against a garment until said rear ply is attached to said garment and with a pressure insufficient to cause any of the softened rear ply to be pressed through the front ply of said fabric label.

4. The method, of attaching a label to a garment, comprising forming a label of a multiple ply fabric, with a derivative of cellulose as the rear ply, applying a solvent to said rear ply until said rear ply is sufficiently attacked to form an adhesive substance, and in the presence of heat pressing said label against a garment until said rear ply is attached to said garment and with a pressure insufficient to cause any of the softened rear ply to be pressed through the front ply of said fabric label.

5. The method, of attaching a label to a garment, comprising forming a label of a multiple ply fabric, with an ester of cellulose as the rear ply, applying a solvent to said rear ply until said rear ply is sufficiently attacked by said solvent that it loses its fabric form upon the application of pressure and heat, and pressing said label against a garment.

6. The method of attaching a label to a garment, comprising forming a label of a multiple ply fabric, with an acetate of cellulose as the rear ply, applying a solvent to said rear ply until said rear ply is sufficiently attacked by said solvent that it loses its fabric form upon the application of pressure and heat, and pressing said label against a garment.

7. The method, of attaching a label to a garment, comprising interweaving certain threads of a material other than a cellulose ester with the base fabric of the label and floating said threads on the back of the fabric, interweaving cellulose ester threads with the floats, softening the cellulose ester threads until they are sufficiently attacked by said solvent that they lose their fabric form upon the application of pressure and heat by applying to the fabric a solvent which softens the cellulose ester threads but not the base fabric or the floated threads, and pressing the back of the label against the garment until the label and the garment adhere.

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