Sept. 1, 1942. M. SPERBER 2,294,518

LAMINATED FABRICS

Original Filed June 1, 1937 2 Sheets-Sheet 1

Fig. 1

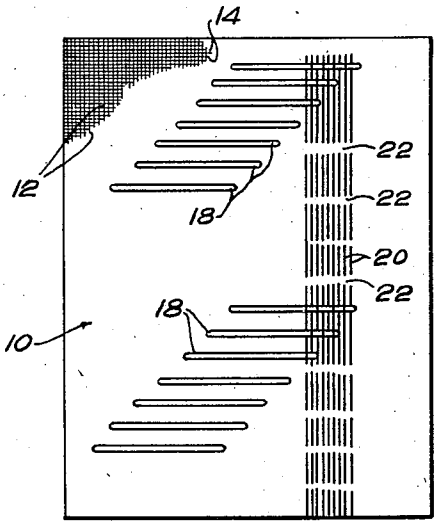


Fig 2

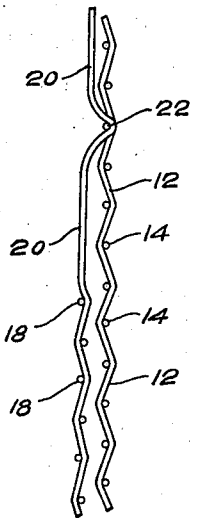
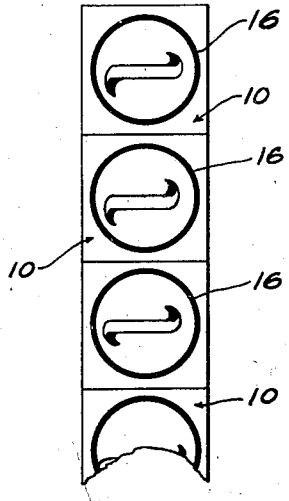


Fig 3



INVENTOR.
Meyer Sperber

BY Brown & Jones
ATTORNEYS

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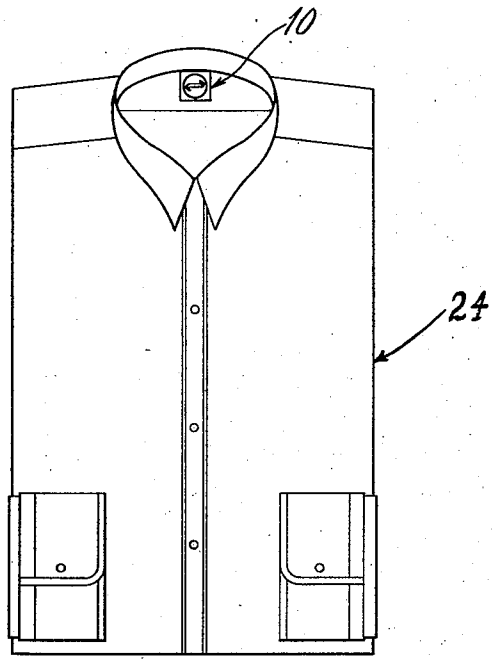


Fig. 4.

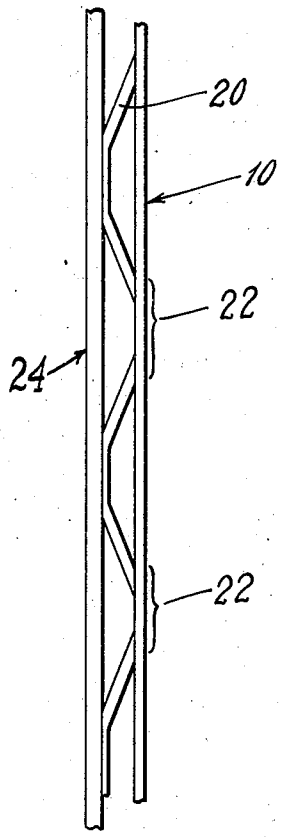


Fig. 5.

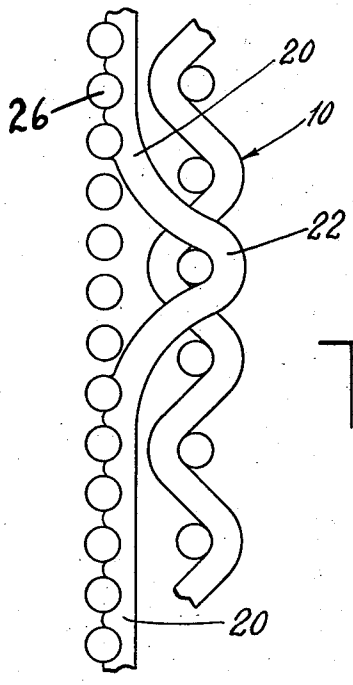


Fig. 6.

Meyer Sperber
INVENTOR

BY Brown & Jone
ATTORNEYS

Patented Sept. 1, 1942

2,294,518

UNITED STATES PATENT OFFICE

2,294,518

LAMINATED FABRIC

Meyer Sperber, Philadelphia, Pa.

Original application June 1, 1937, Serial No. 145,915. Divided and this application March 28, 1940, Serial No. 326,319

8 Claims. (Cl. 139—413)

This invention relates to laminated fabrics and more specifically to garment labels.

This application is a division of my co-pending application Serial No. 145,915, filed June 1, 1937.

In general, it is an object of the invention to provide an article of manufacture of the character described, which will efficiently perform the purposes for which it is intended, which is simple and economical of construction, which can be expeditiously, conveniently and safely manipulated, and which can be readily manufactured and assembled.

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 selvedges, 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 label which may be adhesively attached to a fabric or garment without the use of separately applied adhesive; which may be applied 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 may be attached at some period after the garment has been made and without disarrangement of the latter; which is so securely attached that the garment may be laundered throughout the life of the garment without the labels being detached; which is prepared by the usual machinery for weaving fabrics; and which 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 an article of manufacture possessing the features, properties and the relation of elements which will be exemplified in the article hereinafter described 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 drawings, 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 representation, in cross-section, of the fabric shown in Fig. 1;

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

Fig. 4 is a plan view of a shirt to which has been attached one of the labels shown in Fig. 3.

Fig. 5 is a diagrammatic representation of a portion of a label attached to a portion of a garment; and

Fig. 6 is a greatly enlarged diagrammatic representation showing the attachment of certain threads of the label to the warp or woof of a garment such as is shown in Fig. 4.

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 fabric 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 may 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 drawings, 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 trade-mark 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 drawings 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. Over those areas where there are no floats other threads may be interwoven only with the cellulosic threads and if the latter, for example, run in the direction of the warp, the said other threads may be in the direction of the woof and need not be adhesive. In case there are no floats, or even if there are, the adhesive threads may be introduced occasionally as a warp or woof thread and themselves be carried on the back for long distances to form the second ply. See Fig. 6. 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 24, for example, (see Fig. 4) 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 solvent, 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. In Fig. 5 there is shown a diagrammatic representation of the cellulosic threads which are interwoven at 22 with the label 10 and which are pressed interlockingly with the shirt 24. This interlocking is shown greatly enlarged in Fig. 6, where 12 and 14, as identified by reference to Fig. 2, are the warp and woof threads of the label. The cellulosic threads 20 are shown in the condition in which they are after they have been softened somewhat and pressed against the warp (or woof) threads 26 of the second fabric. Both the warp and the woof threads of the second fabric are not shown for purposes of clarity. The threads 20, due to the softening and pressure, have been deformed and grippingly and interlockingly are attached to the threads 26 of the second fabric.

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 may be made in the above article and different embodiments of the invention could be made without departing from the scope thereof, it is intended that all matter contained in the above description or shown in the accompanying drawings 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 desire to secure by Letters Patent is:

1. Backing cloth comprising a double ply fabric having fusible yarns exposed on the outer side of the front ply, adapting the backing cloth to be fusibly united to a face fabric through the instrumentality of said fusible yarns, and fusible yarns on the inner side of said front ply between said plies, adapting said plies to be fused together, the front and back plies being initially united solely by interweaving whereby the fusing capacity of the fusible yarns is perpetuated until such time when said backing cloth shall be applied to the face fabric and subjected to a process of fusion.

2. Backing cloth comprising a double ply fabric having fusible yarns exposed on the outer side of the front ply, adapting the backing cloth to be fusibly united to a face fabric through the instrumentality of said fusible yarns, and fusible yarns on the inner side of the front ply between said plies, adapting said plies to be fused together, the front and back plies being initially united solely by interweaving whereby the fusing capacity of the fusible yarns is perpetuated until such time when said backing cloth shall be applied to the face fabric and subjected to a process of fusion, the outer side of said back ply being devoid of fusible yarns.

3. A double ply fabric having fusible yarns exposed on the outer side of one of the plies, adapting said fabric to be fusibly united to another fabric through the instrumentality of said fusible yarns, and fusible yarns on the inner side of said one ply between said plies, adapting said plies to be fused together, said plies being initially united solely by interweaving whereby the fusing capacity of the fusible yarns is perpetuated until such time as said fabric shall be applied to another fabric and subjected to a process of fusion.

4. A double ply fabric having fusible yarns exposed on the outer side of one of the plies, adapting said fabric to be fusibly united to another fabric through the instrumentality of said fusible yarns, and fusible yarns on the inner side of said one ply between said plies, adapting said plies to be fused together, said plies being initially united solely by interweaving whereby the fusing capacity of the fusible yarns is perpetuated until such time as said fabric shall be applied to another fabric and subjected to a process of fusion, the outer side of the other of said plies being devoid of fusible yarns.

5. A cloth article and attached label comprising a piece of cloth and a label pressed against said piece of cloth, said piece of cloth comprising a plurality of fibers, said label comprising a multiple ply fabric having cellulose derivative threads incorporated therewith and visible on the back thereof only, said threads being interlockingly attached to the front ply of said fabric, said threads having deformed shapes which permanently grip said fibers, whereby there is a permanent union between said article and said label.

6. A cloth article and attached label comprising a piece of cloth and a label pressed against said piece of cloth, said piece of cloth comprising a plurality of fibers, said label comprising a multiple ply fabric having resinous threads incorporated therewith and visible on the back thereof only, said threads being interlockingly attached to the front ply of said fabric, said threads having deformed shapes which permanently grip said fibers, whereby there is a permanent union between said article and said label.

7. A cloth article and attached label comprising a piece of cloth and a label pressed against said piece of cloth, said piece of cloth comprising a plurality of fibers, said label comprising a multiple ply fabric having thermoplastic cellulose derivative threads incorporated therewith and visible on the back thereof only, said threads being interlockingly attached to the front ply of said fabric, said threads having deformed shapes which permanently grip said fibers, whereby there is a permanent union between said article and said label.

8. A cloth article and attached label comprising a piece of cloth and a label pressed against said piece of cloth, said piece of cloth comprising a plurality of fibers, said label comprising a multiple ply fabric having cellulose acetate threads incorporated therewith and visible on the back thereof only, said threads being interlockingly attached to the front ply of said fabric, said threads having deformed shapes which permanently grip said fibers, whereby there is a permanent union between said article and said label.

MEYER SPERBER.