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H. SILVERMAN

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EMBOSSED SHOULDER STRAPS

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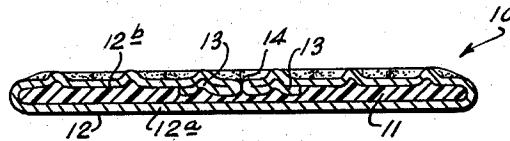


Fig. 1.

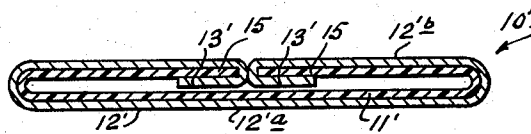


Fig. 2.

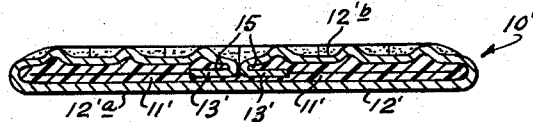


Fig. 3.

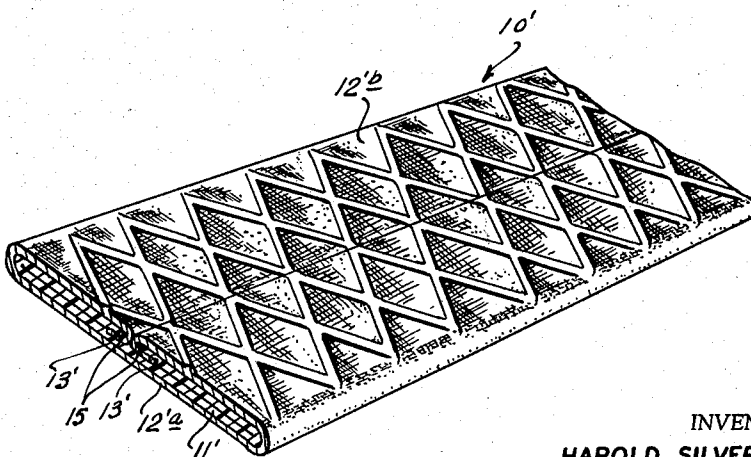


Fig. 4.

INVENTOR.
HAROLD SILVERMAN

BY

Allan S. Silverman

ATTORNEY.

1

3,153,246

EMBOSSED SHOULDER STRAPS

Harold Silverman, Yonkers, N.Y., assignor to Maid-Rite Novelty Corp., Long Island City, N.Y., a corporation of New York

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1 Claim. (Cl. 2—338)

This invention relates generally to shoulder straps for brassieres, slips or other articles of feminine wearing apparel, and the present application is a continuation-in-part of my copending application for United States Letters Patent, Serial No. 124,914, filed July 18, 1961.

An object of the invention is to provide shoulder straps of the described character with embossed decorative or ornamental designs to enhance the appearance thereof, and which may be correlated with the patterns of lace or other decorative fabrics included in the associated garments or wearing apparel.

Another object is to provide shoulder straps of the described character with permanent decorative embossing capable of withstanding the repeated launderings to which the straps and associated garments or wearing apparel are usually subjected.

A further object is to provide shoulder straps of the described character with decorative embossing which appears only on the outer or exposed surface of the strap while the inner surface of the latter, which is in contact with the wearer's body, remains smooth for optimum comfort to the wearer.

In accordance with an aspect of the invention, a laminated strap includes a textile fabric tape of cotton or other suitable fiber folded around a liner of thermoplastic material, such as, polyethylene or the like, so as to completely envelop the latter, and one surface of the laminated strap is embossed while the liner thereof is in a molten or plastic condition so that the embossed pattern is impressed through the textile fabric into the plastic material which impregnates the textile fabric and, upon the setting of the plastic material, forms an intimate bond with the textile fabric for securely retaining the tape in its folded condition with the embossed pattern permanently impressed therein.

If the thermoplastic material is in the form of a continuous, relatively thin web having a width approximately equal to that of the finished strap, as in the above mentioned application Serial No. 124,914, and the fabric tape folded around such web to form the laminated strap has its longitudinal edge portions additionally folded under so that raw edges of the fabric will not appear at the longitudinal medial seam of the strap, then double thicknesses of the fabric are present at the opposite sides of the medial seam and, during the embossing of the strap, there is insufficient penetration or impregnation of the plastic material into the outer layer of fabric at the central portion of the strap having such double thicknesses of fabric so that the embossed pattern may be imperfectly retained in the central portion of the strap, particularly after repeated launderings thereof.

Accordingly, in a preferred embodiment of the invention, the thin web of plastic material to be included in the laminated strap is given a width approximately equal to twice the desired width of the completed strap and is longitudinally folded along with the textile fabric tape so that, when the longitudinal edge portions of the fabric tape are folded under to avoid the presentation of raw edges at the longitudinal medial seam, plastic material is interposed between the double thicknesses of the fabric at the central portion of the resulting strap to ensure adequate penetration or impregnation of the plastic material into all of the outer layer of fabric during the embossing operation so that the embossed pattern will be securely retained

2

over the entire outer surface of the laminated strap even after repeated launderings thereof.

The above, and other objects, features and advantages of the invention, will be apparent in the following detailed description of illustrative embodiments thereof which is to be read in connection with the accompanying drawing forming a part hereof, and wherein:

FIG. 1 is a transverse sectional view of an embossed shoulder strap in accordance with an embodiment of the present invention;

FIG. 2 is a transverse sectional view illustrating the manner in which a fabric tape and a web of thermoplastic material are mutually folded during the production of an embossed shoulder strap in accordance with a preferred embodiment of the invention;

FIG. 3 is a transverse sectional view of an embossed shoulder strap produced from the folded plastic web and fabric tape of FIG. 2; and

FIG. 4 is a perspective view of a fragment of the shoulder strap shown in FIG. 3.

Referring to the drawing in detail, and initially to FIG. 1 thereof, it will be noted that a shoulder strap material embodying the present invention and there generally identified by the reference numeral 10, is of the laminated type and includes a relatively thin liner or core 11 of thermoplastic material, such as, for example, polyethylene or the like, which preferably has a thickness between approximately .003 and .005 inch, and a woven textile fabric tape 12 of cotton or other suitable fiber longitudinally folded around the thermoplastic liner 11 so as to completely envelop the latter. The longitudinal edge portions of tape 12 are preferably folded under, as at 13, so as to avoid the presence of raw edges of the fabric at the seam 14 which extends along the longitudinal medial line of the outer or upper surface of the strap material 10.

The folded woven textile fabric tape 12 forms an inner or bottom layer 12a and an upper or outer layer 12b integrally joined together along the opposite longitudinal edges of strap material 10, while the folded under edge portions 13 and the adjacent central portion of the upper or outer layer 12b form double thicknesses of fabric at the opposite sides of the central seam 14.

The inner and outer layers 12a and 12b of fabric are bonded together by pressing together such layers while the thermoplastic material of liner 11 is in a plastic or molten condition so that the plastic of liner 11 impregnates the fibers of the fabric layers and, upon setting thereof, forms a secure bond therewith.

In producing the laminated strap material 10 of FIG. 1, the thermoplastic material intended to form the liner 11 may be applied, in molten condition, to the central portion of the woven textile fabric tape 12 which forms the lower layer 12a and, thereafter, the side portions of the tape may be folded upwardly and inwardly to form the upper layer 12b overlying the lower layer 12a, while the edge portions of the tape are folded under the side portions of the tape intended to form the upper layer 12b, as at 13. Finally, the folded tape enveloping the plastic liner may be passed between pressure rollers which cause the molten or plastic material of liner 11 to impregnate the textile fibers and, upon setting, form a secure bond therewith.

Alternatively, the thermoplastic liner 11 of FIG. 1 may be in the form of a continuous web or film having a width approximately equal to one-half the width of the woven textile fabric tape 12 and being fed with the wider textile fabric tape 12 into a conventional folding device which continuously operates to fold the tape around the thermoplastic web. After the tape 12 has been folded around the thermoplastic web 11, the assembly may be passed continuously through a suitable heating unit which is effective to heat the thermoplastic web to a temperature of be-

tween 350 and 400° F. so that the same is rendered molten or at least plastic. After the liner 11 of the strap material 10 has been rendered molten or at least plastic by the heating thereof, the strap material may be passed between pressure rollers which compress together the textile fabric layers 12a and 12b so as to cause impregnation of the plastic material of liner 11 into the fibers of the textile fabric material, whereupon the strap material 10 is suitably cooled so as to set the thermoplastic material of the liner 11. As described more fully in the copending application Serial No. 124,914, an embossed design is provided on the upper or exposed outer surface of the laminated strap material 10 by providing the pressure roller which contacts the fabric layer 12b with an engraved surface having the desired design in intaglio therein so that, as the strap material passes between the pressure rollers, the engraved surface of that one of the rollers produces a corresponding embossed design in the upper layer 12b of the folded tape 12.

Further, the pressure roller that contacts the lower or inner fabric layer 12a of the strap material preferably has a smooth surface so that the lower fabric layer 12a will also have a smooth surface for comfortable contact with the wearer's body.

It has been found that, where the thermoplastic liner 11 underlies the upper or outer layer 12b of textile fabric, the embossing of the latter is transmitted to the thermoplastic material, that is, the raised portions of the design in the upper fabric layer 12b are filled or supported by correspondingly raised portions of the thermoplastic liner, as is clearly apparent in FIG. 1. Further, the thermoplastic material impregnates the fabric of the tape 12 so that, when the thermoplastic material has set, the pattern or design embossed in the upper fabric layer 12b tends to be permanently retained by the plastic of liner 11 even after repeated launderings of shoulder straps formed from the embossed strap material 10.

In the absence of the thermoplastic liner 11, embossing of the shoulder strap material is not permanently retained and further results in the transmission of the embossed pattern to the lower or inner surface of the strap material, and in weakening of the textile fabric. Thus, in the strap material 10 embodying the present invention, the thermoplastic liner 11 performs the multiple functions of retaining the embossed design or pattern in the upper or outer surface of the strap material, of permitting the restriction of the embossed design or pattern merely to the outer layer or surface of the strap material so that a smooth lower or inner surface can be maintained, and further of retaining the strap material in a relatively flat condition, that is, preventing curling of the shoulder strap during use.

Although the shoulder strap material 10 described above with reference to FIG. 1 tends to retain the embossed pattern by reason of the inclusion of the plastic liner 11, it has been found that the retention of the embossed pattern is not absolutely uniform. More specifically, at the central portion of the strap material, where the folded under edge portions 13 of the tape 12 are interposed between the plastic liner 11 and the upper or outer fabric layer 12a, the double thicknesses of fabric may cause insufficient impregnation of the softened plastic material into the outer layer 12b so that setting of the plastic material cannot provide an absolutely secure bond of the outer layer 12b to the folded under edge portions 13 and further may not retain the embossed pattern in the central portion of outer layer 12b with the same security as in the remainder of layer 12b, particularly when subjected to repeated launderings.

Accordingly, in a shoulder strap material in accordance with a preferred embodiment of the invention, which is indicated generally at 10' on FIGS. 2, 3 and 4, the thermoplastic liner 11' is arranged to extend, as at 15, between the folded under edge portions 13' of the fabric tape 12' and the superposed central portion of the upper or outer

fabric layer 12'b so that, when the shoulder strap material 10' is passed between the pressure rollers with the liner 11' in molten or at least plastic condition, the thermoplastic material also impregnates the central portion of the upper or outer layer 12'b of fabric superposed on the folded under edge portions 13'. Thus, the embossed pattern formed in the central portion of the outer layer 12'b by the patterned pressure roller is also impressed in the edge portions 15 of the liner so that the latter functions to permanently and securely retain the embossed pattern in the central portion of fabric layer 12'b, even though that central portion has double thicknesses of fabric, and even though the shoulder strap material is subjected to repeated launderings.

As in the case of the first described embodiment of the invention, the liner 11' of the preferred shoulder strap material 10' may be applied, in molten condition, but to substantially the entire width of the woven textile fabric tape 12', leaving bare only the longitudinal edge portions of the tape 12 which are to form the folded under edges 13' and, thereafter, the side portions of the tape 12' may be folded upwardly and inwardly to form the upper layer 12'b with the edge portions 13' being folded under the edge portions 15 of liner 11'.

Alternatively, the thermoplastic liner 11' may be in the form of a continuous web or film having a width only slightly less than the width of the woven textile fabric tape 12', and which is fed continuously with the tape through a conventional folding device which operates to fold the edge portions 13' of the tape against the edge portions 15 of the liner 11' and further to fold the side portions of the tape 12' and of the plastic web or liner 11' upwardly and inwardly over the central portions thereof. Thus, as shown in FIG. 2, at the completion of the above described folding operation, the lower or inner fabric layer 12'a has the central portion of the liner 11' superposed thereon, while the side portions of the liner underlie the upper or outer fabric layer 12'b and have their edge portions 15 interposed between the central portion of outer layer 12'b and the folded under edges 13' of the latter.

As previously indicated herein, the edge portions 15 of plastic liner 11' ensure that the embossed pattern formed in layer 12'b will be retained with equal permanence both in the central portion thereof and in the other portions of that upper or outer layer.

It will be apparent from the above that the present invention makes it possible to provide shoulder straps cut from the strap material 10 or 10' which have permanently embossed decorative designs or patterns that may be correlated with the patterns of lace or other decorative fabrics included in the garments or wearing apparel to which the shoulder straps are affixed. Although the drawing illustrates a shoulder strap material having a basket-weave design or pattern embossed in the upper or outer surface thereof, it will be obvious that the surface of the engraved pressure roller may be formed to produce other desired embossed designs or patterns.

Although illustrative embodiments of the invention have been described in detail herein with reference to the accompanying drawing, it is to be understood that the invention is not limited to those precise embodiments, and that various changes and modifications may be effected therein by one skilled in the art without departing from the scope or spirit of the invention, except as defined in the appended claim.

What is claimed is:

A decoratively patterned, laminated shoulder strap for brassieres and the like, comprising a woven textile fabric tape having a central portion defining an inner fabric layer, side portions folded over said central portion and coming together to define an outer fabric layer with a longitudinal medial seam along the latter, and folded under longitudinal edge portions extending from said

5

seam under said outer fabric layer; and a thin thermoplastic web of a thickness in the range between approximately .003 and .005 inch, said web having a central portion overlying said central portion of the tape and folded side portions extending under said folded side portions of the tape and projecting between said outer fabric layer and said folded-under longitudinal edge portions of the tape; said outer fabric layer having embossing therein which extends across said seam to define the decorative pattern of the strap, and said folded side portions of the web having a corresponding embossed pattern in the surfaces thereof underlying said outer fabric layer and which is impressed through the latter into said folded side portions of the web so that the thermoplastic material of the

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web impregnates the outer fabric layer to permanently retain the decorative pattern therein.

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