July 29, 1947. E. A. STUART 2,424,777

LAMINATED ELASTIC MATERIAL FOR FOOTWEAR, METHOD OF MAKING SAME, AND IMPROVED FOOTWEAR MADE THEREBY

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Fig. 1.

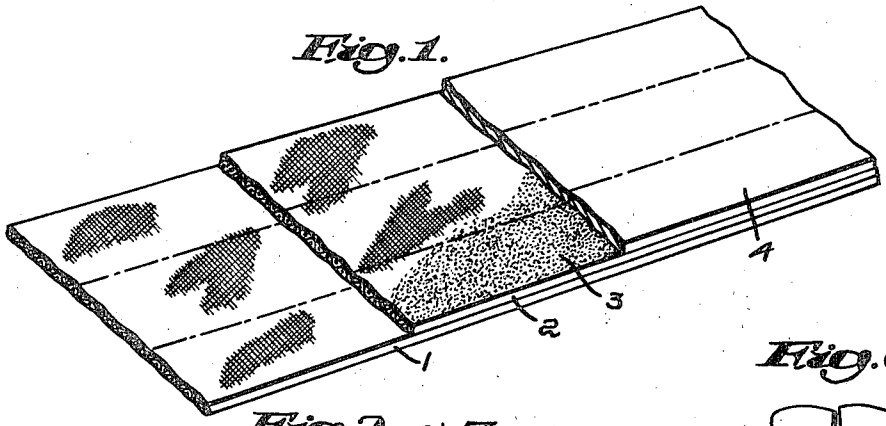


Fig. 2.

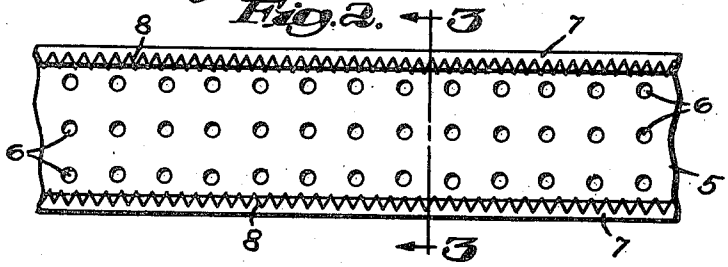


Fig. 5.

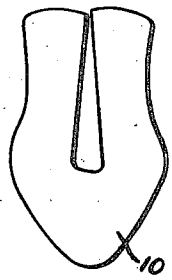


Fig. 3.

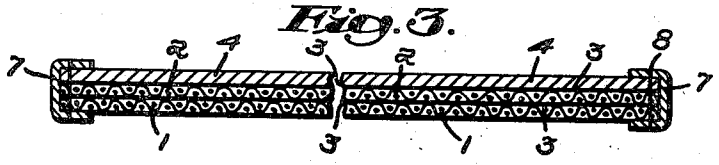
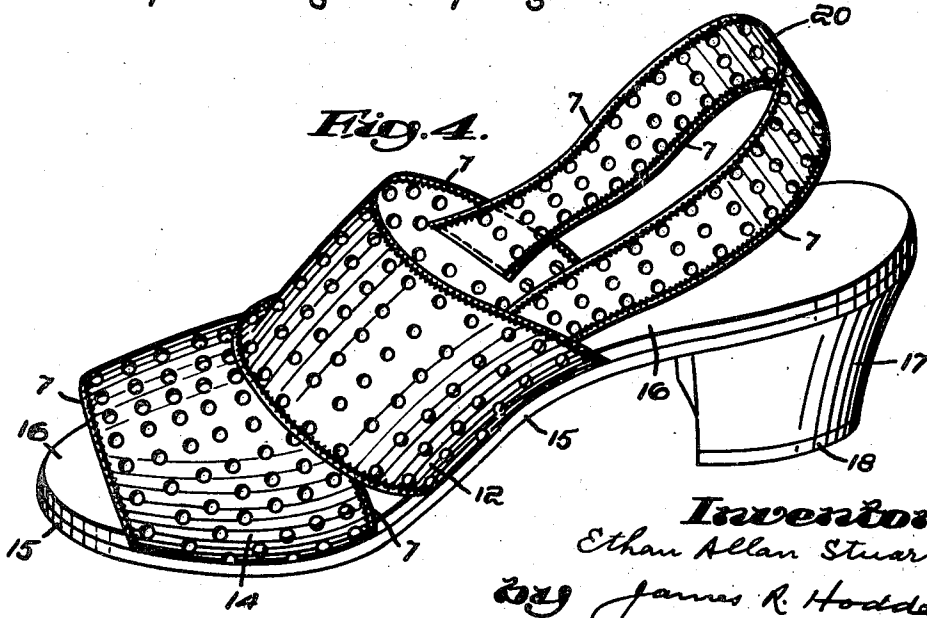


Fig. 4.



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LAMINATED ELASTIC MATERIAL FOR FOOTWEAR, METHOD OF MAKING SAME, AND IMPROVED FOOTWEAR MADE THEREBY

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2 Claims. (Cl. 154—116)

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My present invention is a novel and improved laminated material especially constructed and designed to provide desirable, attractive, and elastic upper material for footwear, and includes a novel method of manufacturing this material, as well as the improved elastic and automatic-fitting shoe structure made thereof.

While my invention is especially intended for the type and design of shoes having upper material in the form of straps, strips, or the like, said material can also be utilized for ordinary vamps, quarters, or heel portions of any type of footwear.

Heretofore it has been customary in making women's shoes, especially the toe-less and heel-less styles, to utilize various types of rubber elastic along the edges of the upper to give proper elasticity for fitting and hugging to the foot of the wearer, as well as to facilitate putting on the same. But under present war conditions, restrictions, and the absence of any such rubber elastic material, it has been extremely difficult to make satisfactory fitting as well as neat-appearing footwear of this type.

Various attempts have been made to utilize rubber substitutes or leather substitutes for this purpose; and the present method has been to employ material of twice the width and one-half the thickness of the finished strip or strap intended to be utilized, and then fold over the same from each edge inwardly, with the edges meeting on the middle line of the finished strap, and stitched together. Thus, there was provided a folded edge along each side of the strap, as well as giving proper thickness and strength to the material for use in such footwear. These strips and straps were usually perforated, embossed, or otherwise ornamented. The folded layers required cementing together and the meeting edges in the middle of the strap being stitched together produced an objectionable ridge in the middle of the strap or strip as well as also preventing perforations or the like ornamentation along this middle part.

My present invention eliminates the difficulties above briefly outlined and provides a better appearing, better fitting, and a more yielding elastice strap, strip, or upper material for making shoes, especially sandals, open-toed, and heel-less styles, or so-called "sling" type of shoe.

In carrying out my present invention, I utilize a plurality of layers having inherent yielding capacity, together with an intermediate bonding material which will also yield and be resilient during the life of the shoe. Such intermediate

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bonding layer or coating also preferably adds to the thickness and strength of the upper material and is of a character not to dry out or harden like ordinary cements, glues, or the like.

Furthermore, I provide a novel type of protecting and finishing edge binding which must have capacity for yielding with the laminated material constituting the strips, straps, vamps, foxings, quarters, or other shoe parts, and presents an attractive and harmonious appearance, and gives resilience to the upper parts so made.

The outer layers may be of similar material and of a different color, but preferably I utilize an outermost layer of suedette, preferably rubberized suedette, or the like. These layers are bonded together with intermediate layers or coatings of permanently elastic bonding material, which I find is ideally performed by various adhesives and synthetic plastics.

These bonding layers or coatings add to the resiliency as well as to the thickness and strength of the entire laminated structure, giving longer wearing capacity and preserving the resiliency of the shoe upper parts, and thus provide a better automatic fitting or hugging of the forepart or parts and heel straps, to the foot of the wearer.

My novel and laminated strips, straps, and other shoe parts may be made of any desired width and may, and preferably would be, made in relatively large sheets and the strips or shoe parts cut or died therefrom to accurate size. In either instance, the edges of the strips and straps or shoe parts are then bound by an elastic material, which may be of suitable synthetic plastic with stitch-retaining and wear-resisting strength. For this purpose various vinyl plastics are suitable, such as plasticized vinyl chloride co-polymer, or alkaline latex 50% dispersion of polymerized 2-chloro butadiene in water containing dispersing agent and stabilizers, or the like. Such binding is folded over the edges of the shoe parts to be made, folding over the edge of the strip or strap from my laminated material—using a suitable binding width and stitching the same by zig-zag stitching to cause no restriction on the elasticity of such binding or material; whereas a straight row of stitches would restrict the yielding quality of both the binding and laminated layers.

Thus the novel combination of a bias-cut faille, backed by a bias-cut fabric, adhesively united together and to a resilient rubberized suedette, and with adhesive which is permanently elastic, made in shoe upper parts of any form, and bound with a yielding synthetic plastic simu-

lating leather, constitutes an ideal material for footwear.

While I prefer to utilize faille and suedette as above noted, I may also utilize any other suitable material such as cotton, satin, gabardine, or equivalents, either for the outer finishing layer, the inner lining layers, or intermediate layers, which are cut on the bias to provide the stretch desired, and bound with a strip of resilient plastic material.

Referring to the drawings illustrating preferred embodiments of my present invention:

Fig. 1 is a diagrammatic view partly in cross-section illustrating my improved laminated layers of shoe upper material;

Fig. 2 is a view on an enlarged scale of a strip or strap cut from the laminated material of Fig. 1 and with the ornamentating and binding thereon;

Fig. 3 is an enlarged cross-sectional view on the line 3—3 of Fig. 2;

Fig. 4 is a diagrammatic view of a typical shoe construction of stripping and straps, and

Fig. 5 is a view of a typical shoe upper or vamp other than stripping and straps which may be cut from the material of Fig. 1.

As shown in Fig. 1, wherein I have illustrated three layers of material although, as above noted, any number of layers can be utilized depending upon the thickness of the material used and the uses and strength or total thickness desired for any particular shoe upper material required, I preferably make such sheet material with one outer layer, herein shown as the bottom layer 1 of faille, backed and reinforced by an adjacent layer of textile material 2.

Both these layers 1 and 2 are cut on the bias to give elasticity and are united by an elastic bonding layer 3; and a final outer or finishing layer 4, preferably of rubberized suedette, is also united by a similar elastic adhesive coating or layer 3 between the suedette 4 and the reinforcing layer 2.

With the sheet material thus prepared, I may then cut therefrom shoe uppers of any desired form, length, size or contour. Thus, wide or narrow strips or straps and of any suitable length or width, from which to make shoe uppers, can be cut and also shoe parts such as vamps, quarters, or the like.

In Fig. 2 I have illustrated a typical strip 5 cut from the sheet material, shown in Fig. 1, of appropriate width to constitute upper strapping material for a shoe. This strip 5 may be ornamented in any suitable way, as by a series of perforations 6—6 and will, preferably, have each edge bound as indicated at 7—7 with a protecting and finishing binding, which I prefer to have to simulate a leather binding but which will be elastic. For this purpose I find that elastic plastic is an ideal material and in order to still further maintain the elasticity or resiliency between the combined elastic layers of the strip 5 and the elastic binding 7, I attach the binding 7 by zigzag stitching 8 along each edge, substantially as shown in Fig. 2. The binding material 7 may be also united along the edge of the shoe upper by elastic cement, if desired.

In Fig. 5 I have shown for illustrative purposes a shoe vamp 10 which may be dyed out by a clicking machine or other operations directly from the material of Fig. 1, and thereupon the edge portions would also be preferably bound by an elastic plastic protecting and finishing binding, such as shown at 7 in Figs. 2 and 3.

In Fig. 4 I have illustrated a type of women's footwear, such as a sandal or the like, wherein the upper of the forepart comprises two pieces of stripping 12 and 14 lasted and secured between a sole 15 and insole 16 or in any other suitable manner, to which the usual wooden heel 17 and top lift 18 is attached. A heel strap 20 is secured to the forepart stripping 12 in the usual manner, and because of the resiliency of the entire material the resultant shoe structure comprises a snugly fitting upper and heel strap.

My invention of shoe upper material and parts, comprising one or more textile layers cut on the bias to afford stretch, and bound with an edge-protecting and finishing strip of resilient synthetic plastic material, is believed to be a distinct novelty in this art, and I wish to claim same herein broadly.

When I utilize one or more layers in the laminated structure made of synthetic plastic material as above noted, I also prefer to bond the same in a similar manner with a resilient adhesive as well as to bind the edges of the laminated layers with an edge-protecting and finishing strip of resilient synthetic plastic material to thus provide suitable yield, spring, and resiliency to the entire laminated structure, as well as to give a desirable finishing appearance.

This attractive and resilient feature of my improved strap or strip construction is particularly important where the article is intended for use as a belt, wrist-watch straps, suspenders, or other similar uses in wearing apparel or clothing accessories.

I claim:

1. Shoe upper vamp material comprising a plurality of layers bonded throughout their length and width with permanently plastic adhesive, at least one of said layers being of textile material cut on the bias to permit stretchability, and all of said layers being bound on the edges by resilient synthetic plastic material to afford resiliency to the entire plurality of vamp layers.

2. The improved process of making resilient shoe upper vamp material from a plurality of layers of normally non-resilient material, which consists in uniting a plurality of layers with resilient bonding adhesives, at least one of said layers being of textile material cut on the bias, thereupon cutting said plurality of layers into shoe upper parts of predetermined contour, and thereupon binding the edge of said shoe upper parts with a strip of resilient synthetic plastic material.

ETHAN ALLAN STUART.

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