

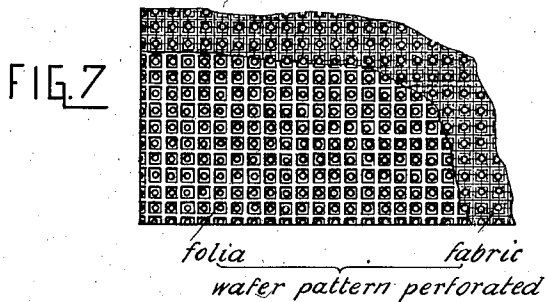
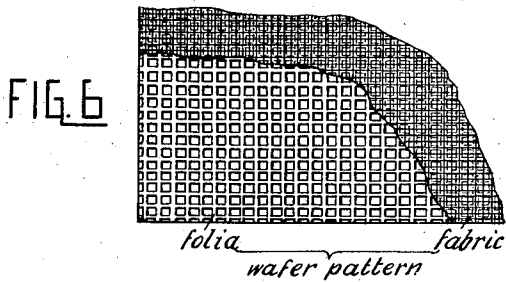
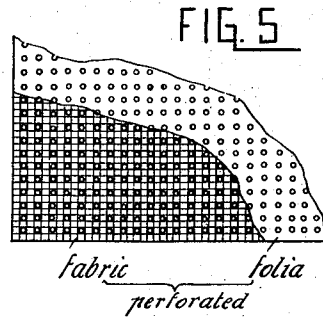
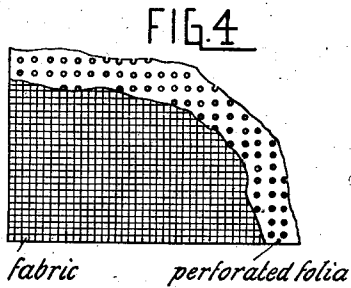
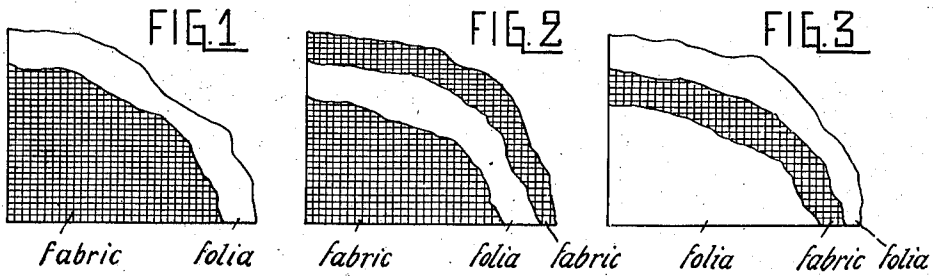
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IMPREGNATING MATERIAL FOR SHOE LININGS

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IMPREGNATING MATERIAL FOR SHOE
LININGSWilly Stelkens, Cologne, Germany, assignor to
C. F. Boehringer & Soehne G. m. b. H., Mann-
heim-Waldhof, GermanyApplication February 11, 1933, Serial No. 656,320
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My invention relates to impregnating materials adapted for use in imparting stiffness to certain parts of boots and shoes and more especially to the linings of the toe-caps or tips and the heel counters. It is an object of my invention to provide a material fit for use in the stiffening of these linings, which, while being at least equally efficient as the stiffeners hitherto suggested, offers particular advantages regarding the saving of time and labor.

As is well known to those skilled in the art, in order to impart to certain parts of shoes and boots and more especially to the toe-caps and to the heel counters a particular stiffness, the shoes and boots are reinforced at these places with inserts of a particular kind, for instance by cementing into the shoe or boot at the place to be reinforced a plurality of layers of fabric, using therefor a solution of an agglutinant such as celluloid to fix the fabric in place. In order to incorporate in the fabric sufficient quantities of celluloid or of some other agglutinant which solidifies on drying, to stiffen it sufficiently, the solution must be spread on the fabric repeatedly. Obviously much time is consumed in this operation and comparatively large quantities of solvents must be evaporated. Therefore, instead of first spreading a solution of an agglutinant on the fabric and thereafter fixing this piece of fabric in place, I have adopted, more particularly in mass production, a different procedure: The stiffener material is prepared beforehand by combining the fabric forming the insert with a solid agglutinant, and this material, which is thus prepared ready for use, is then cemented in between the linings of the shaft. A stiffening material of this kind may be produced either by cementing a plurality of layers of strong fabric together by means of liquid agglutinants or by immersing such a fabric in a solution of an agglutinant which solidifies on drying. Alternatively a fabric being sufficiently strong as such to stiffen the caps etc. may be provided on either surface with a thin layer of an agglutinant sufficing to cement it to the lining of the shoe. The first of these processes again involves the drawbacks mentioned above, viz. loss of time and solvents. In the last-mentioned case the thickness of the stiffener material renders it necessary to sharpen it at the edges by hand in order to avoid the formation of hard uneven projections exerting pressure on the toes and heel of the bearer.

In order to avoid the sharpening of the edges one might simply insert folia of celluloid or some similar material in slightly swollen condition be-

tween the fabric lining the shaft of the shoe. A material of this kind would render the sharpening operation superfluous since the pressure applied to the material would cause some of the agglutinant to cover the projecting edges. Apart therefrom the cuttings resulting in the manufacture of this stiffening material might be utilized for other purposes. However the pressure required to firmly unite the lining placed on the last with the softened celluloid also effects a displacement of the celluloid at the curved points of the last, which are exposed to the greatest pressure, and a similar displacement of the celluloid takes place before the pinching, the film of agglutinant becoming too thin at these places and being torn off.

I have now found that if a film or folium of the agglutinant, such as celluloid, is combined with a layer of fibrous material, such as a light and thin open-textured fabric, the drawbacks mentioned above as connected with the use of simple celluloid are done away with, while the drawbacks connected with the use of the well known stiffeners do not arise. I have found that the layer of fibrous material united with the celluloid or the like prevents the agglutinant from being displaced by the pressure acting upon it, before the agglutinant has had time to enter and impregnate the linings between which it has been inserted. In contradistinction to the known stiffeners mentioned above, in which a stiff fabric is relied upon to stiffen the cap or heel piece, the thin layers of celluloid merely serving for cementing the stiffener material to the lining, the thin layer of fibrous material combined with the agglutinant according to the present invention merely serves for retaining the agglutinant, while the latter, being softened by swelling, permeates the linings between which it has been inserted and on solidifying imparts to them the required stiffness.

In view of this action of the layer of fibrous material the proportion of such material as compared with the weight of the agglutinant combined with it is distinguished from similar combinations in that the weight of the fibrous material is less than one fourth of the weight of the agglutinant or not more and in many cases less than 20% of the total weight of the cementing material, being reducible for instance to 10 per cent of the whole.

Obviously, besides the combination of a single folium of agglutinant with a single layer of fibrous material, I may also combine a layer of such light and thin fibrous material with two

films or folia of agglutinant covering the fibrous material on both sides and inversely a film or folium of a solid agglutinant may be covered on both sides with such layers of a light fibrous material, this latter merely constituting a means for preventing an undue spreading of the agglutinant under the action of mechanical pressure.

In the case where only a single fibrous layer is combined with the agglutinant or where the solid agglutinant is enclosed between two such fibrous layers, these layers should consist of a light and thin fabric provided with wide meshes so as to be readily permeable for the agglutinant when softened by contact with a solvent or swelling agent. On the combined layers being inserted between two layers of lining, the agglutinant will readily permeate the lining and stiffen and cement it in place.

The cuttings of an impregnating and stiffening material of this kind can readily be put to further use, similarly as cuttings of pure celluloid folia, in contradistinction to the known stiffeners being combinations of fibrous material and celluloid or the like, comprising comparatively heavy and dense fabrics, which cannot be reused and must therefore be got rid of by burning them, which in cases where celluloid forms the agglutinant layer, must be done with caution. The cuttings of a material according to this invention, which comprises a light wide-meshed fabric, can be returned into the process of manufacture, since the light fabric can be stripped from the layer of celluloid by means of solvents and can be separated from the celluloid in the filter press, so that a compound material of this kind also offers further economical advantages.

I may use many kinds of fabrics and more especially wide-meshed fabrics readily permeable for the softened agglutinant, more especially light upholstering nettle cloth, gauze and the like. As to the agglutinant, I prefer using a film or folium of a cellulose derivative, in which may be incorporated a suitable plasticizer, such film or folium consisting for instance of celluloid, celluloid cuttings, nitrocellulose, cellulose acetate or cuttings of such compounds, of masses containing cellulose acetate including celloid cuttings, of acetate silk cuttings or of mixed cellulose esters and ethers or mixtures of such, as described for instance in a copending application for patent of the United States, Serial No. 474,301, filed by myself and Richard Müller jointly, which may be mixed with each other or with foreign additions such as kaolin, but also of other jelly-forming material. These compounds may still contain some of the fluid solvents or swelling agents admixed with them during manufacture, so that according to the percentage, which may for instance vary between 10 and 25%, calculated on the dry weight of the film or folium, the pieces of cementing material cut to shape can be fixed in place in the shoes or boots with small quantities of fluid or vaporous solvents or swelling agents only, or even without such solvents or swelling agents, by merely applying heat and pressure. The cementing material may however also be immersed in a suitable solvent or swelling agent, such as for instance acetone, methyl acetate, ethyl acetate, butyl acetate, etc., methyl alcohol or the like, or mixtures thereof, being fixed in the shoe by pressure. Instead of immersing it in the solvent or swelling agent, these solvents or swelling agents may also be spread or sprayed on the compound material

or on the places in the shoe to which it shall be applied, or the agglutinant may be softened by the action of vapors of volatile solvents. I may also fix the new material in the boot or shoe at a temperature above normal.

I may further improve the impregnating material according to the present invention by forming the film or films of agglutinant with indentures or perforations, which may also extend across the layer of fibrous material, and I thereby obtain that the film or folia of agglutinant being acted upon by a solvent or swelling agent will soften more readily than compact plain folia, the film or folia being converted quickly into a tough sticky jelly, which under the action of mechanical pressure applied to it will expand more evenly than plain folia, the indentures or perforations being filled with the agglutinant, which also spreads over the edges of the toe cap or heel counter, covering the projecting edges and sloping towards the shaft. The indentures may preferably have the form of furrows or may have the form of a wafer pattern. If the film or folia is perforated, these perforations may extend right across the compound material and in this latter case care must be taken to employ a fabric, the threads of which are protected as far as possible against being cut or severed when perforating the material, since the threads must retain their mechanical resistivity in order to enable them to withstand the subsequent pinching operation.

I may for instance combine a film of celluloid containing about 20% camphor and weighing about 500 grams per square metre with a wide-meshed nettle cloth weighing 80 to 120 grams per square metre, the cloth being moistened with ethyl acetate and the celluloid film being formed, on its free side, together with the fibrous layer, with indentures by means of a heated engraved cylinder. When produced in this manner the agglutinant merely adheres to the surface of the light fabric without substantially impregnating the same.

Pieces of this compound material cut to size are immersed in ethyl acetate to cause swelling of the agglutinant and are then inserted for instance between the linings of a toe tip. The shaft of the shoe is now mounted under tension in place on the wooden last serving to impart to the tip the proper shape and is pinched. The toe tip or cap is left on the last until it has become dry and hard.

On removing the last, the celluloid will be found to have permeated the linings on both sides, having imparted to them a uniform stiffness and having thoroughly cemented them to the leather, the edges, instead of projecting, being formed with a gradual slope.

In the drawing affixed to this specification and forming part thereof,

Fig. 1 illustrates the combination of a single layer of fabric with a single folium of agglutinant,

Fig. 2 shows a folium enclosed between two layers of fabric,

Fig. 3 a lay of fabric enclosed between two folia,

Fig. 4 is a modification of the article shown in Fig. 1, the folium being perforated;

Fig. 5 is a similar modification, wherein the perforations extend also through the fabric;

Fig. 6 shows the article of Fig. 1 modified by indentures forming a wafer pattern, and

Fig. 7 is a modification of the article shown in

Fig. 6, showing perforations extending across both layers.

Various changes may be made in the details disclosed in the foregoing specification without departing from the invention or sacrificing the advantages thereof.

I claim:—

1. Impregnating material for stiffening the linings of boots and shoes comprising the combination of a folium of a solid agglutinant capable of softening when acted upon with a solvent or swelling agent and of hardening on drying, with a sheet of fibrous material adhering to one surface of said folium, said sheet being so thin and light and of such loose texture as to be readily permeable to the softened agglutinant and to be incapable of exerting any appreciable stiffening action, when impregnated with agglutinant.

2. A sheeted adhesive useful for cementing and stiffening the linings of boots and shoes, comprising in combination at least one folium of an adhesive cellulose derivative being substantially water proof but becoming tacky in the presence of organic softening and swelling agents, and at least one thin layer of light, wide-meshed fabric material; said adhesive being present in quantity only sufficient to cement together and to stiffen the linings of boots and shoes when applied therebetween, said fabric being readily permeable to said adhesive when in softened condition and being of weight only sufficient to retain said cellulose derivative in position when said ad-

hesive sheet is pressed between said linings while in softened condition; said cellulose derivative adhering to said fabric without substantially impregnating the same until applied in use.

3. The sheeted adhesive of claim 2 wherein said fabric material forms not substantially more than about one-third the total weight of said adhesive sheet.

4. The sheeted adhesive of claim 2 wherein said adhesive is formed of a single folium of cellulose derivative enclosed between two layers of said fabric material.

5. The sheeted adhesive of claim 2 wherein said adhesive is formed of a single layer of fabric material enclosed between folia of said cellulose derivative.

6. The sheeted adhesive of claim 2 wherein said cellulose derivative is pierced with perforations increasing its surface area.

7. The sheeted adhesive of claim 2 wherein said cellulose derivative is formed with indentures and perforations increasing its superficial area.

8. The sheeted adhesive of claim 2 wherein the folium of cellulose derivative extends beyond the layer of fibrous material.

9. The sheeted adhesive of claim 2 wherein said cellulose derivative contains a small amount of organic softening agent.

10. The sheeted adhesive of claim 2 wherein said cellulose derivative is celluloid.

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