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METHOD OF MAKING FOOTWEAR

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2 Sheets-Sheet 1

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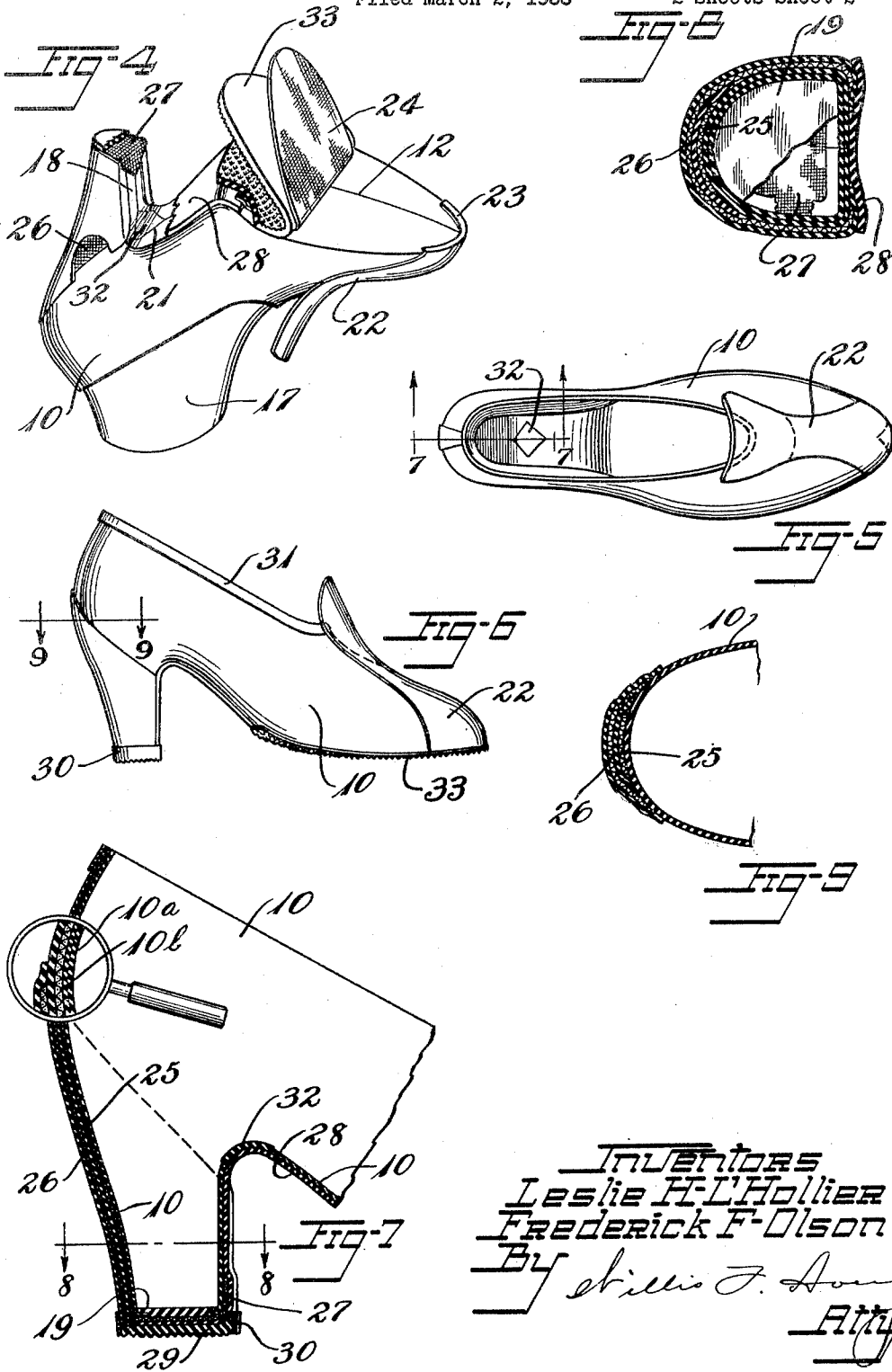
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UNITED STATES PATENT OFFICE

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METHOD OF MAKING FOOTWEAR

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6 Claims. (Cl. 12—142)

This invention relates to footwear, and especially to rubber footwear of the overshoe type, and to the method of making the same.

In footwear of prior constructions in which filler soles, binders and shank pieces of rigid or semi-rigid material have been used, the overshoe has not been satisfactorily adaptable to shoes of varying widths and lengths, especially in that a satisfactory fit often has not been obtained in the region of the shank and heel. This has been true especially in overshoes for high-heeled footwear where various widths of heels have been encountered in shoes of similar sizes, and the extreme curvature of the shank portion has made it difficult to fit the overshoe on the shoe. Also it has been difficult at times to accommodate the overshoes to shoes of different lengths.

A further objection has been that in prior constructions wherein the upper has been terminated along the margin of the sole close to the edge of the same in an overlapped relation on an insole, the space thus formed has required filling by means of filler soles or binders or inner soles or combinations of these, which construction has usually made the sole undesirably stiff and cumbersome in order to provide a satisfactorily even bottom, and the desired lightness in weight coupled with smoothness of construction has not been provided.

The chief objects of this invention are to provide an improved footwear construction; to provide an overshoe with a stretchable bottom, especially in the shank portion or in the heel portion, or both, so that the overshoe will fit shoes of various lengths and widths in the region of the shank and heel; to provide lightness in weight coupled with durability and neatness of construction, to provide improved procedure.

These and further objects will be apparent from the following description, reference being had to the accompanying drawings in which:

Fig. 1 is a plan view of a one-piece shoe upper constructed according to and embodying the invention, the upper being shown in the flat.

Fig. 2 is a perspective view with parts broken away and sectioned of a support upon which the upper of Fig. 1 is being cut-seamed in accordance with the invention.

Fig. 2a is a section taken along the line 2a, 2a of Fig. 2.

Fig. 2b is a section taken along the line 2b, 2b of Fig. 2.

Fig. 2c is a fragmentary cross section of the shoe upper of Fig. 2 in the region of the cut-seam,

the material being partly extended from the flattened condition of Fig. 2.

Fig. 3 is a perspective view, with parts broken away and sectioned, of an inverted shoe last with the upper mounted upon it.

Fig. 3a is a section taken along the line 3a, 3a of Fig. 3.

Fig. 4 is a view like Fig. 3, but showing additional shoe components in the course of assembly upon the same.

Fig. 5 is a plan view of the improved overshoe in its preferred form.

Fig. 6 is a side elevation of the same.

Fig. 7 is a section taken along the line 7—7 of Fig. 5.

Fig. 8 is a section taken along the line 8—8 of Fig. 7.

Fig. 9 is a section taken along the line 9—9 of Fig. 6.

According to the preferred procedure of the invention we first form a one-piece upper of sheet rubber material, either with or without a fabric lining, which fabric lining, if used, is preferably stockinet or other stretchable fabric. To the end of eliminating the necessity for using an insole the upper is extended smoothly across the sole portion. While this may be conveniently effected by depositing the rubber upon a form from an aqueous dispersion thereof so as to be in one continuous piece, the construction may be effected also by cutting parts from sheet rubber, either calendered or deposited in the sheet form.

Referring to the drawings, a one-piece upper and shoe bottom 10 is cut from unvulcanized sheet rubber slightly larger than the intended size so as to permit trimming. In the illustrated embodiment the piece 10 consists of sheet rubber without fabric. As one face of the piece may constitute the lining of the overshoe and the other face the outer surface, preferably this sheet material is formed of two plies 10a and 10b (Fig. 7) of rubber of suitable compositions and colors.

The piece 10 is then folded along the line 11 in the manner illustrated in Fig. 2 and the lower and back margins extending along the sole, shank, heel breast and the rear of the heel are simultaneously trimmed to shape and united integrally in edge-to-edge registering relation by a cutting operation, sometimes referred to herein as cut-seaming, by means of a cutter 13 pressed against the material while it is upon a support 14. The cut-seaming unites the material intimately in edge-to-edge registering relation in the manner illustrated in Figs. 2, 2a and 2b. When the material in the region of the cut-seam is partly

extended from the flattened condition it appears as shown in Fig. 2c, and when the upper is drawn upon the last 17 as shown in Figs. 3 and 3a, a substantially flush and smooth surface is provided over the shoe bottom, there being substantially no bulge at the seam 12 which extends down the sole, shank, heel breast and back of the heel between the side margins of the shoe, preferably centrally thereof. This absence of bulge at the seam has the advantage of making possible the use of thin materials for the sole and the total absence of any insole is permitted. Objectionable adhesion away from the line of cutting between the adjoining faces of the folded rubber may be prevented as by a suitable dusting powder such as starch applied to these faces. The top of the upper at 15 and the bottom of the heel portion at 16 are left open to facilitate mounting upon a last.

The upper is then mounted upon a last 17 with the cut-seam 12 extending along the longitudinal center of the sole and the longitudinal center of the breast portion 13 of the heel, although if desired this seam may be disposed at one side or the other of the center. A heel plug 18 may be inserted and the lower margin 16 of the rubber folded over and tacked down upon the heel plug as shown in Fig. 3 to provide a heel seat. To the end of facilitating a close fitting of the material about the shank portion 20 and in the region where the shank portion joins the breast of the heel the material is preferably formed with an opening 21 of rectangular or diamond shape, Fig. 3, resulting from slitting the material when flat as shown at 21a, Fig. 2, which permits the material to be fitted in closely conforming relation upon the last without the formation of wrinkles or other malformations. This opening also has the advantage of contributing to the stretchability of the shank portion of the shoe in the final construction. In some cases, as where the heel is not too complex in contour, a good fit can be obtained without the provision of this opening, in which case the seam may extend all along the shoe bottom.

After the piece 10 has been fitted upon the last the other component parts of the shoe may be built upon it including a front piece 22 which may be lapped over at 23 upon the sole portion, a substantially non-stretchable sole tap stiffener 24 of square woven fabric or other suitable material and a sole tap 33 of rubber composition. An inner rubberized heel and back stiffener 25 of square-woven or other substantially non-stretchable material is disposed as a vertical strip next to the layer 10. An outer rubber covered heel stiffener 26 which may also be of square woven fabric or the like, so as to be substantially non-stretchable, is applied around the heel but not entirely across the breast portion 13 thereof. Preferably the element 26 is extended only around the edge of the heel onto the breast portion for security of attachment leaving the remaining breast portion freely stretchable. A stiffening element 27 may be applied at the heel bottom and this element likewise extends only partially onto the breast portion of the heel so as not to restrict the stretchability of the latter to any material extent. A shank piece 28 of elastic material, preferably unreinforced rubber composition, is applied upon the shank portion of the shoe with its bottom end in under-lapping relation with the sole tap pieces 24 and 33 and with its rear portion extending upward over the breast portion of the heel and onto the heel bottom. A

heel tap 29 and marginal trimming strip 30 of rubber composition may then be applied. Likewise a rubber trimming 31 may be applied at the top margin of the upper. A gusset 32, which may be an identifying label is provided in the opening 21 at the shank to fill the same, appearing at the inside of the shoe. After the complete assembly of the shoe, it is vulcanized thus binding all the components into a homogeneous unit.

The overshoe thus constructed is stretchable lengthwise and crosswise in the shank portion and also in the breast portion of the heel so that the stretchable area extends from the bottom margin of the heel tread to the rear margin of the sole tread, and this stretchable area permits fitting of the overshoe upon footwear of various lengths and widths and is especially advantageous in adapting the overshoe to women's high-heeled footwear. The shoe bottom is smooth across its width and needs no insole owing to the edge-to-edge registering relation at the cut-seam, which results upon spreading the united material and mounting it upon the last as in Figs. 2c, 3, and 3a, and the manner in which the upper extends continuously and smoothly across the shoe bottom; and the shoe, while light in weight and attractive in appearance, is strong and durable.

While it is preferred to include fabric or fibrous reinforcements as above described, these may be omitted in some cases, either largely or altogether, and only rubber parts added to the one-piece upper to provide an all rubber or substantially all rubber shoe stretchable throughout.

Variations may be made without departing from the scope of the invention as it is defined in the following claims.

We claim:

1. The method of making rubber footwear which comprises disposing layers of unvulcanized sheet-rubber upper material in superimposed and unadhered relation, cutting the superimposed layers in such shape as to provide a bottom for the upper adapted to conform closely to a last upon mounting the upper thereon, including sole, shank and heel covering portions, and simultaneously by the act of such cutting uniting said layers integrally in edge to edge relation in a seam extending along said sole, shank and heel portions between the side margins thereof and adapted upon mounting the upper upon the last to be substantially flush with the bottom of the upper, then mounting the upper upon the last with said seam extending smoothly along said sole, shank and heel portions, assembling parts thereon to complete the footwear, and vulcanizing the assembly.

2. The method of making a rubber overshoe having a one-piece upper and a stretchable shank, which method comprises disposing layers of unvulcanized sheet-rubber upper material in superimposed and unadhered relation, cutting the superimposed layers in such shape as to provide a bottom for the upper adapted to conform closely to a last upon mounting the upper thereon, including sole, shank and heel covering portions, and simultaneously by the act of such cutting uniting said layers integrally in edge to edge relation in a seam extending along such sole, shank and heel portions between the side margins thereof and adapted upon mounting the upper upon the last to be substantially flush with the bottom of the upper, then mounting the upper upon the last with said seam extending smoothly along said sole, shank and heel portions, assembling parts thereon to complete the overshoe, in-

cluding reinforcing elements over the sole and heel portions, while keeping the intervening shank portion stretchable by virtue of the stretchability of the material of the upper, and vulcanizing the overshoe.

3. The method of making rubber footwear which comprises folding unvulcanized sheet-rubber upper material to provide a vamp portion at the fold, cutting the superimposed layers in such shape as to provide opposite the fold a bottom for the upper adapted to conform closely to a last upon mounting the upper thereon, including sole, shank and heel covering portions, simultaneously by the act of such cutting uniting said layers integrally in edge to edge relation in a seam extending along such sole, shank and heel portions between the side margins thereof and adapted upon mounting the upper upon the last to be substantially flush with the bottom of the upper, then mounting the upper upon the last with said seam extending smoothly along said sole, shank and heel portions, and with said fold at the front portion, assembling parts thereon to complete the footwear, and vulcanizing the assembly.

4. The method of making rubber footwear which comprises disposing layers of unvulcanized sheet-rubber upper material in superimposed and unadhered layers, cutting the superimposed layers in such shape as to provide a bottom for the upper adapted to conform closely to a last upon mounting the upper thereon, including sole, shank and heel covering portions, and simultaneously by the act of such cutting uniting said layers integrally in edge to edge relation in a seam extending along such portions adapted upon mounting the upper upon the last to be substantially flush with the bottom of the upper, cutting the united layers in the region of the shank-covering portion to provide an opening therethrough, then mounting the upper upon a last with said seam extending smoothly along said sole, shank and heel portions, the shank and heel breast portions of the upper being conformed to the last by virtue of the width adjustment afforded by said opening, assembling parts on said upper to complete the footwear, and vulcanizing the assembly.

5. The method of making rubber footwear which comprises disposing layers of unvulcanized sheet-rubber upper material in superimposed and unadhered layers, cutting the superimposed layers in such shape as to pro-

vide a bottom for the upper adapted to conform closely to a last upon mounting the upper thereon, including sole, shank and heel covering portions, and simultaneously by the act of such cutting uniting said layers integrally in edge to edge relation in a seam extending along such portions and adapted upon mounting the upper upon the last to be substantially flush with the bottom of the upper, cutting the united layers in the region of the shank covering portion to provide an opening therethrough, then mounting the upper upon the last with said seam extending smoothly along said sole, shank and heel portions, the shank and heel breast portions of the upper being conformed to the last by virtue of the width adjustment afforded by said opening, assembling parts on said upper to complete the footwear, including reinforcing elements over said sole and heel portions and a gusset filling said opening, and vulcanizing the assembly.

6. The method of making a rubber overshoe having a one-piece upper and a stretchable shank, which method comprises folding unvulcanized sheet rubber upper material in superimposed and unadhered layers, cutting the superimposed layers opposite the fold in such shape as to provide a bottom for the upper adapted to conform closely to a last upon mounting the upper thereon, including sole, shank and heel covering portions, and simultaneously by the act of such cutting uniting said layers integrally in edge to edge relation in a seam extending along such portions, said seam being adapted upon mounting the upper upon a last to be substantially flush with the bottom of the upper, slitting the united layers in the region of the shank covering portion to provide an opening therethrough, then mounting the upper upon a last with said seam extending smoothly along said sole, shank and heel portions, the shank and heel covering portions being conformed to the last by virtue of the width adjustment afforded by said opening, assembling parts upon the upper to complete the overshoe, including reinforcing elements over the sole and heel portions, while keeping the intervening shank portion stretchable by virtue of the stretchability of the material of the upper and including a gusset to fill said opening, and vulcanizing the overshoe.

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