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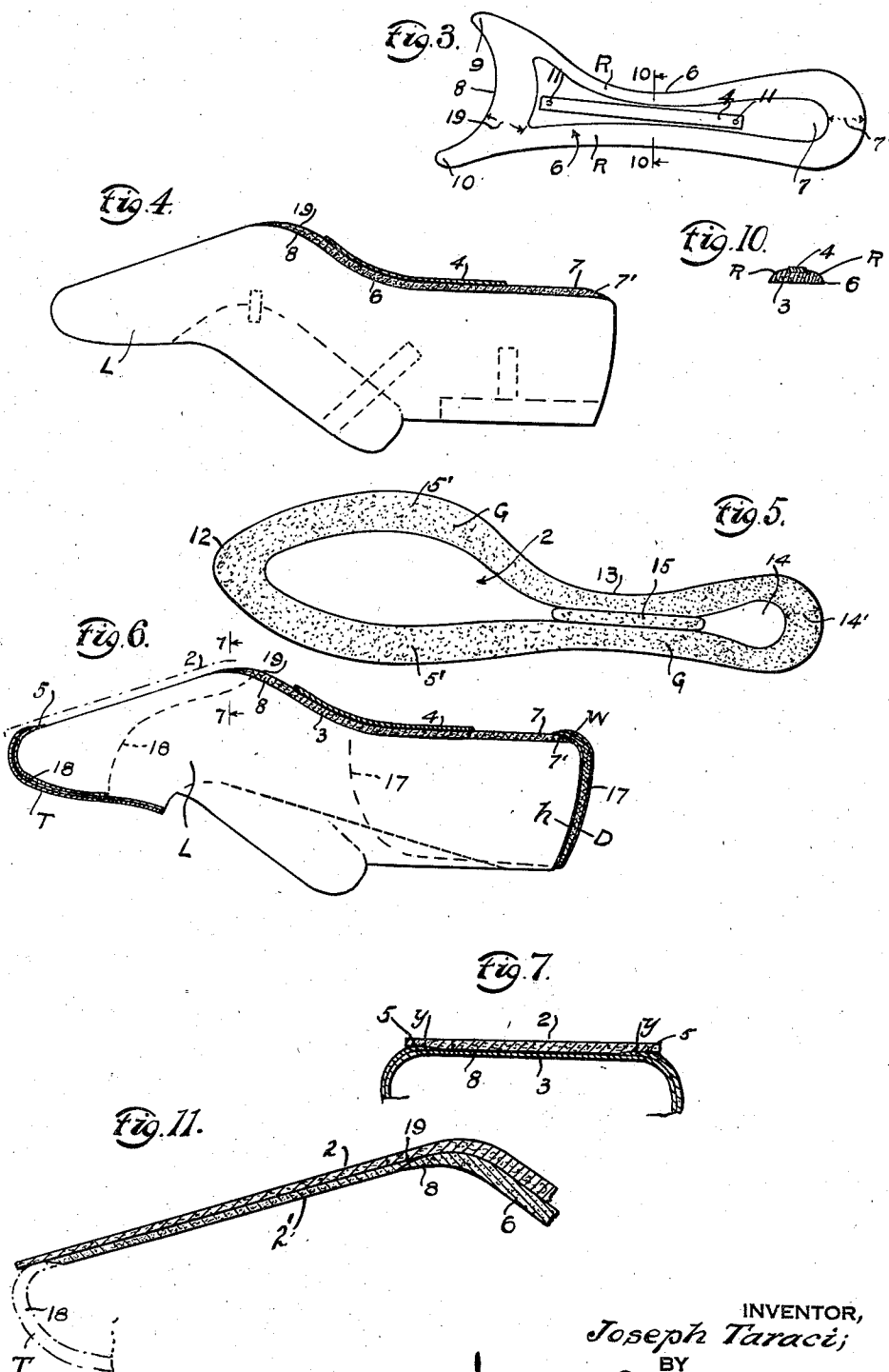
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SHOE STRUCTURE

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SHOE STRUCTURE

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2 Claims. (Cl. 36-12)

The present invention relates to an improvement in cemented shoe structures and methods of manufacture and has for its main feature the simplifying of the manufacturing steps thereof through certain structural changes in the shoe and the provision of a more flexible sole, thereby eliminating sole squeaks, making for great foot comfort and eliminating surface unevenness in the inner portions of the sole.

10 A further advantage in the herein disclosed structure lies in the elimination of an innersole, and also in the elimination of the heel rand, thus making for economy in material and manufacturing costs, without in any way detracting from the appearance of the shoe or shortening its durability or wearing qualities, but at the same time making a shoe lighter in weight, and more flexible, than shoes made by the so-called "McKay" or similar processes.

20 A further feature lies in the provision of means for waterproofing the outer sole of the shoe, by covering the inner surface thereof with a waterproofed liner, or insert, as will be hereinafter disclosed in detail.

25 The foregoing and other features will be apprehended as the description proceeds herein, and it is obvious that modification may be made in structure and method disclosed herein without departing from the spirit hereof or the scope of the appended claims.

In the drawings,

Fig. 1 is a side view of a shoe constructed as herein disclosed, with portions broken away to better disclose the details of assembly;

35 Fig. 2 is a bottom view of the present shoe, showing the details before the outer sole is applied;

Fig. 3 is a reduced plan view of the shank piece with steel shank stiffener in place and ready for applying the upper;

Fig. 4 is a side view of a last, with the shank piece thereon ready to receive the upper, the shank piece being shown in longitudinal section;

45 Fig. 5 is a plan view of the outer sole trimmed, skived and cemented on its inner face, ready for application to the lasted upper and shank piece;

Fig. 6 is an elevation of the last with shank piece and upper in position to receive the outer sole, the upper, shank, box toe and counter, being shown in section on the last;

Fig. 7 is an enlarged sectional view taken on line 7-7, Fig. 6, looking in the direction of the arrows;

55 Fig. 8 is a sectional view taken along the line

8-8, Fig. 1, looking in the direction of the arrows;

Fig. 9 is a sectional view taken along the line 9-9, Fig. 1, looking in the direction of the arrows;

Fig. 10 is a sectional view, taken along the line 10-10, Fig. 3, looking in the direction of the arrows, and Fig. 11 is a sectional view, somewhat similar to Fig. 1, but showing the addition of an inner waterproof insert on the outer sole.

As will be hereinafter noted the present structure is directed to an all-cemented, lasted shoe, as regards the lasting of the upper to the sole, the upper being stitched together in the usual known manner. This shoe may be provided with a leather or wooden heel.

The upper generally is denoted by 1, and as shown in Fig. 1, is provided with an extended box toe 18, said box toe being extended so that its ends S are carried towards the heel portion of the upper between the vamp lining V and the doubler D, Fig. 8. The toe portion of the shoe as shown in Fig. 8 comprising the outer leather portion T, the doubler D and the vamp lining V, in addition to the box toe 18.

The preformed box toe 18 may be of celluloid or of the usual stiffened textile, and its extending ends S are so dimensioned that they meet and overlap the extensions 9 and 10 of the shank piece 6 when assembled on the last L, Figs. 1, 2 and 6. The box toe is made long enough in its dimensions to overlap and join the shank piece side portions 9, 10 when the upper is pulled over the last, as indicated by the dotted lines S-S, Fig. 2.

The leather shank piece 6, Fig. 3, is illustrated as including heel, shank and ball portions 7, 6 and 8, respectively, and has two forward extensions 9 and 10, which, when overlapped by the box toe as above described, bridge the side sections of the upper and outer sole 2 adjacent the ball portion of the shoe as shown in Fig. 1, at B, and thereby strengthen and reinforce the ball portion and at the same time leaving the said portion perfectly flexible. The shank piece is provided along its center with a flexible steel shank stiffener 4, the latter being affixed at its ends by rivets 11-11 to said shank piece.

The shank piece 6 is skived or beveled all round its outer, marginal edge on its flesh side, as at 7', 19, R and R, Figs. 3 and 9. Its central portion, as in Fig. 9, may have a rounding bevel R-R, as shown, so as to enable the shank section of the shoe as in Fig. 9, to be attractively rounded,

while the remainder of said edge may be a straight line bevel or skive.

The outer sole 2 is also skived around its outer marginal edge on its flesh side, so that when in assembled relation in a shoe both skived portions, as illustrated in Fig. 1, at 14', 7' and 7, create an open angular space therebetween in which to receive the skived marginal edges of the upper 1, doubler D, counter 17 and lining h, these latter being adhesively connected to each other and to the skived edge of said shank piece 6 and outer sole 2.

The counter 17, Figs. 1 and 6, shown dotted, is oversize and extends at its ends to a point 3—3, shown dotted, Fig. 2 and its lower marginal edge, as at 14', Fig. 1, turned with the skived marginal edges of the upper and is adhered between the skived edges of the outer sole 2 and the skived shank piece 6, so that its edges form a flexible stiffener between the upper and shank piece well into the instep portion of the shoe.

With the parts as above described the operation of assembly of the shoe will now be described, and additional details of structural features outlined.

The first operation is to place a heavy, preferably cardboard liner, not shown, upon the forepart of the last to prevent the shoe sole from sticking to the last, and to receive tacks, when tacking the upper upon the last. This liner may be removed after the lasting is completed and the shoe is ready to receive the sock lining. In some cases this cardboard liner is not necessary but may be used as a safeguard.

Then the shank piece 6, as illustrated in Fig. 3 and shown in Fig. 4 is placed on the rear heel part of the last L, and tacked to the last in the usual manner.

The next operation is to take a counter 17, apply adhesive thereto and insert it in the heel H of the upper, between the heel lining h, Fig. 1 and the doubler D, located about as shown in Figs. 1 and 6. The upper is then assembled upon the last by driving a few tacks in the heel seat of the upper and a few tacks in the heel seam, thus holding the upper upon the last.

Then the box toe is assembled in the upper between the camp lining V and the doubler D, and the upper is then pulled by hand or a pull-over machine.

The next operation is to side-last the upper by applying an adhesive along the marginal portions of the upper, between the upper, the doubler, the lining, the heel, counter, and shank so that when the upper is side lasted and the adhesive set, the marginal portions of the upper become a solid unit with each other and the shank.

Then the toe and heel seat are lasted before the adhesive sets, as in Fig. 6, at X and W. This lasting may be done by hand or by a machine, the upper being held to the last by temporary tacking.

After the lasting of the upper has been completed and the adhesive set, the tacks are removed, and the stiff margin of the upper is then trimmed along its edge about as indicated at 5—5—5, Fig. 2.

After the trimming of the marginal edges 5, the edges of the upper are then skived all round to a thin edge, as indicated at 5, Figs. 8 and 9. After the skiving to an outside feather edge, the skived faces are roughened and an adhesive is applied to the skived, roughened margins 5.

After the foregoing operations to the lasted upper, it is then ready to receive the outer sole 2,

The outer sole 2, shown in Figs. 1, 5, 7, 8 and 9, is of conventional contour, but is prepared by first skiving its outer marginal edge so as to bevel it all round as at 5'—5', 12 and 14', Fig. 5, and also providing a central elongate depression 15 therein at the arch portion of the sole to receive thereon the steel shank stiffener 4 of the shank 6. Then the skived margin of the sole 2 is roughened and adhesive G, Fig. 5 applied to the marginal edge thereof.

If the sole, thus treated, is not applied immediately upon the lasted upper, an adhesive softener is applied upon the upper and shank, and the outer sole 2 is laid upon the upper with its cemented face in contact therewith.

Any type of shoe may be made by this method.

The net result of the herein described mode of treatment and assembly is that the skived and cemented marginal edges of the shank 6, the outer sole 2 and the upper 1, provide an inner, unridged surface, which after the sock lining x has been applied, as shown only in Fig. 8, thus forming the entire inside inner sole forming surface of the shoe, is level, smooth and unbroken, and therefore extremely comfortable to wear. The smoothness of the inside sole surface is further illustrated at Figs. 7 and 9. Fig. 7 being a section taken at about line 7—7, Fig. 6, shows the thin section at the ball of the foot, in Fig. 2, at about the point where the shank and box-toe extensions S—S overlap, thus giving an easy flexibility at this point.

It will further be noted that in Figs. 1, 8 and 9 the composite sole is heavier, and rigid at the heel portion P, Fig. 1, slightly flexible at the shank portion 3, Fig. 1, and comfortably resilient from the shank end 8, 9, 10 to the toe portion.

It will also be noted that the skiving of the outer sole and shank permits an attractive rounding finish of said sole at the narrow shank marginal portions y—y, Fig. 9.

By the extension of the counter and box-toe ends towards the shank portion of the shoe, the shoe becomes thoroughly braced, longitudinally, and in effect while supplying the strengthening support of an inner sole, these parts help hold the shoe snugly to the foot, are light in weight and help retain the shape of the shoe.

It may be desired to waterproof the outer sole 2, in a manner to prevent moisture from seeping into the shoe interior through the sole portion thereof and to this end the forward portion of the outer sole 2, Fig. 10 may be split, and a felt insert 2', permeated with a suitable waterproof filler or cement, substituted for the split and removed sole section. This may be done before the skiving, roughing and cementing of the outer sole takes place.

As an alternate water proofing treatment, the outer sole may be lined, without splitting, with a water proofed liner of suitable material cemented thereto by a suitable water-proof cement after the outer sole is skived, and the later sole treatments carried out as hereinbefore set forth.

Having thus described the invention what is claimed is:

1. A shoe comprising a shank piece having its entire bottom marginal edge portion skived and being provided at its forward edge with forward extensions, an outer sole having its entire top marginal edge portion, skived, and an upper having its lasting allowance skived, the lasting allowance of the upper being turned inwardly beneath, and attached to the skived heel and side portions of the shank piece, and the skived portions of the

outer sole being disposed beneath and attached to the inwardly turned, skived, lasting allowance of the upper entirely around the shoe.

2. A shoe comprising a shank piece having its entire bottom marginal edge portion skived and being provided at its forward edge with forward extensions, an outer sole having its entire top marginal edge portion skived, and an upper having its lasting allowance skived, said upper including a toe cap having rearwardly extending

side portions overlapping the forward extensions of the shank piece, the lasting allowance of the upper being turned inwardly beneath, and attached to the skived heel and side portions of the shank piece, and the skived portions of the outer sole being disposed beneath and attached to the inwardly turned, skived, lasting allowance of the upper entirely around the shoe.

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