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R. L. BOURASSA ETAL

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MEANS FOR STRING-LASTING UPPERS TO LASTS

Filed March 12, 1965

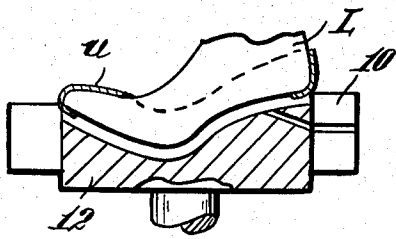


Fig. 1

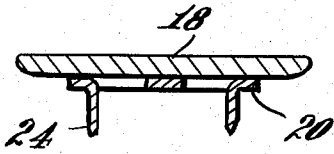


Fig. 4

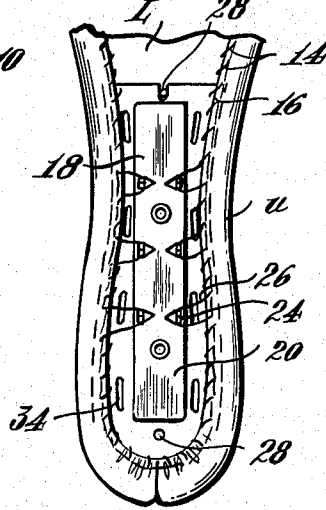


Fig. 2

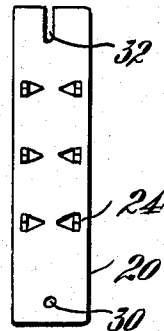


Fig. 6

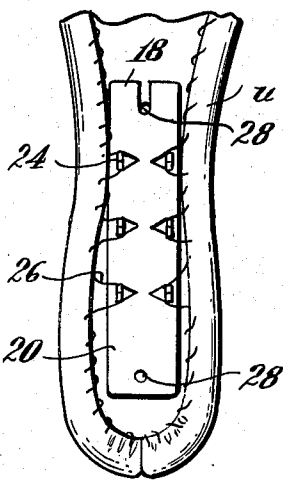


Fig. 7

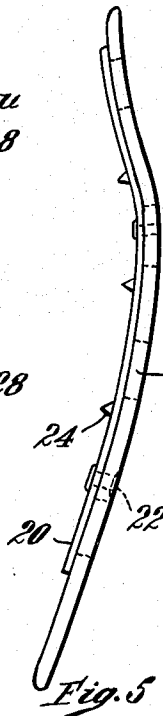


Fig. 5

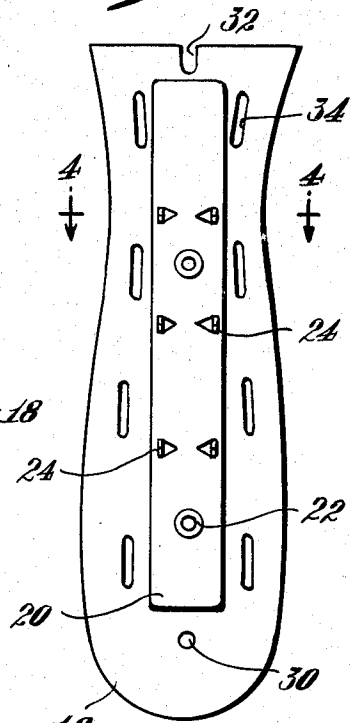


Fig. 3

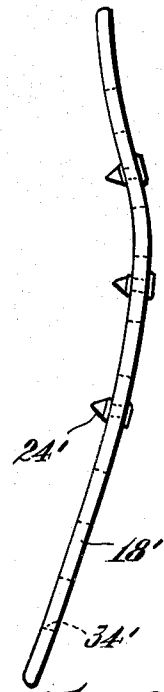


Fig. 8

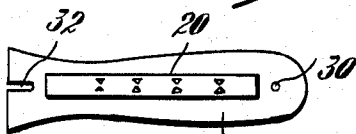


Fig. 9

INVENTORS
Robert I. Bourassa
Julius G. Winkler
Charles K. Woodman
by Roberto, Cushman & Glover
ATT'YS

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MEANS FOR STRING-LASTING UPPERS TO LASTS

Robert L. Bourassa, Wenham, Julius G. Winkler, Lexington, and Charles K. Woodman, Beverly, Mass., assignors to International Vulcanizing Corporation, Waltham, Mass., a corporation of Massachusetts

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3 Claims. (Cl. 12-145)

This invention relates to the manufacture of shoes wherein the upper is leather, fabric or man-made material, to which is attached, by injection molding, an outsole of polyvinyl chloride or the like.

It is customary in making shoes of this kind to string-last the upper to the last and to provide lasting pins at the bottom of the last about which loops of the string-lasting are looped to assist in holding the upper snugly at the shoulder and flat against the bottom. Particularly, the lasting pins are desirable at the arch where the lasting margin tends to bridge the concave surface of the bottom. When a bottom member such as a tuck or shank piece or a combination tuck and shank piece is to be incorporated in the bottom as is desirable in some of the better-made shoes, lasting pins fixed to the bottom of the last cannot be employed because they would interfere with placing the part flat against the bottom. The objects of this invention are to provide for holding the lasting margin in place without lasting pins secured to the bottom of the last; to provide means which in association with the tuck or shank piece or for that matter any bottom part which is to be incorporated into the shoe during the bottom-forming operation to hold the lasting margin snugly against the bottom; to provide means which not only enables lasting the margin snugly about the shoulder of the last flat against the bottom throughout the entire area of the bottom but also assists in holding the part to be incorporated flat against the bottom of the last and correctly positioned both transversely and longitudinally of the bottom; to provide means for lasting the upper to the bottom of the last without modification of the bottom to the last and without adding to the cost of the shoe making operation; and to provide means which will become incorporated in the outsole without in any way altering its appearance or spoiling its comfort or wearing quality.

In accordance with this invention, string-lasting of the upper to the bottom of a shoe in which a bottom part, such as a tuck or shank piece, is to be incorporated is achieved by providing a part with means along the opposite longitudinal edges which project downwardly therefrom, placing the part against the bottom of the last with its edges beneath the lasting margin and looping loops of the string-lasting about the downwardly projecting means. As herein illustrated, a tuck with a metal shank piece attached thereto is provided with prongs extending downwardly therefrom about which the loops are caught. The prongs are struck out of the shank piece along its opposite edges. However, they or equivalent means may be attached to the tuck or to the shank piece. A tuck without the metal shank piece may be employed to support the lasting pins by riveting or otherwise attaching them to its lower surface along its opposite edges. Alternatively, a shank piece without the tuck may be employed having pins struck downwardly therefrom or attached thereto. The area where the lasting pins are customarily employed is at the shank. However, if there is need for lasting pins at other parts of the bottom these may be provided by parts adapted to be placed against the bottom in the areas required and pins attached thereto along the opposite edges so as to be engageable by loops of the lasting string. Since the part carrying the pins is embedded in the outsole only at the lower side and at its edges, to assure a

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good bond the part is provided with holes along its opposite edges through which some of the bottom-forming composition can flow to form an interlock. Optionally, an adhesive may be applied to the bottom side and edges.

The invention will now be described in greater detail with reference to the accompanying drawings wherein:

FIG. 1 is a section longitudinally of a mold assembly designed for injection molding of a bottom (outsole) to an upper which has been string-lasted to a last;

FIG. 2 is a fragmentary bottom view of a last with an upper string-lasted thereto by means of a combination tuck and shank piece;

FIG. 3 is a plan view of the combination tuck and shank piece, to larger scale, prior to use;

FIG. 4 is a transverse section taken on the line 4-4 of FIG. 3;

FIG. 5 is an elevation at one edge of FIG. 3;

FIG. 6 is a plan view of a shank piece by means of which an upper may be string-lasted to a last;

FIG. 7 is a fragmentary bottom view of a last with an upper string-lasted thereto by means of a shank piece;

FIG. 8 is an elevation of one edge of a tuck to which a plurality of prongs have been individually secured to enable string-lasting the upper to the last without a shank piece; and

FIG. 9 is an elevation of a combination tuck and shank showing a hole at one end and a slot at the other for engagement with gauge pins at the bottom of the last.

Referring to FIG. 1, there is shown an upper U applied to a last L by string-lasting and supported at the top of an injection mold 10 above a sole plate 12 for injection of a bottom-forming composition to form and attach a bottom (outsole) to the lasting margin of the upper. Preferably the bottom-forming composition is injected into the mold cavity through the sole plate so that the injection fills the cavity from the bottom.

One of the common ways of mounting an upper on a metal last, such as is employed in attaching an outsole by injection molding, is to sew an overedge stitch 14 (FIG. 2) along the edge of the lasting margin for receiving a draw string 16 so that the latter can be drawn tight and tied to hold the lasting margin flat against the bottom of the last.

It is customary to provide lasting pins at the bottom of the last integral or affixed thereto, particularly along the shank portion about which loops of the stitching 14 or draw string 16 are looped, to assist in holding the lasting margin snugly at the concave portions of the shank where the lasting margin would tend to bridge rather than to follow the surface. The use of lasting pins at the bottom of the last is possible where no bottom member is employed. However, if it is desirable to use a tuck and/or shank piece or to incorporate some other bottom member in the bottom of the shoe it is not possible to use the lasting pins since the latter would interfere with placing the part flat against the bottom. The problem is to provide means to assist in holding the lasting margin snugly engaged about the shoulder and, in particular, flat against the bottom in the area of the shank when it is not possible to have lasting pins fixed to the bottom of the last, although it is to be understood that other portions of the margin may also be desirably held to secure snugness at the bottom.

As herein illustrated (FIG. 2), in one form of the invention, provision for holding the lasting margin at the shank is achieved by use of a combination tuck 18 and metal shank piece 20 attached thereto, for example, by means of rivets 22. The shank piece 22 has struck from it spaced rows of prongs 24, there being three such prongs along each edge. It is to be understood however that a greater or lesser number of prongs may be used depending upon the dimensions of the strip. The combi-

nation tuck and shank piece is placed against the bottom of the last as shown in FIG. 2 with the margin of the tuck underlying the lasting margin of the upper and with the strip 20 situated between the edges of the margin. Loops 26 of the lasting string 16 are caught or looped over the prongs 24 and since approximately the same amount of tension is exerted at each side these loops cooperate to hold the lasting margin snugly against the bottom of the last in close conformity to the curvature of the bottom in this area.

It may be desirable to employ locating pins 28 in the bottom of the last for gauging the longitudinal and transverse position of the combination tuck and shank piece. Such pins 28 can be made of such length as to extend through holes provided for this purpose in the tuck and/or shank piece and preferably as shown in FIG. 9, a hole 30 is made at one end of the tuck and a slot 32 at the other end so that the locating pins 28 do not have to be accurately spaced.

The shank piece 20, as illustrated in FIG. 5, is bent to a shape corresponding to the bottom of the last at the arch and imparts a corresponding shape to the tuck. To provide for firm anchorage of the combination shank piece and tuck to the bottom, particularly since the inner side of the tuck is exposed so that only the bottom side and edges have contact with the bottom formed by injection, transversely spaced rows of elongate holes 34 are provided along its opposite edges into which the bottom composition flows and forms an interlock with the tuck. Optionally, an adhesive may be applied to the underside of the tuck either in place of the slots or in addition thereto.

If it is desirable to incorporate only a shank piece such as shown in FIG. 6 without a tuck, the metal shank piece may be placed against the bottom of the last, as shown in FIG. 7, and loops 26 of the lasting string caught or looped over the prongs 24 to hold the lasting margin snugly in place. When using only the shank piece it is particularly desirable to employ locating pins to properly gauge the position of the shank piece both longitudinally and transversely of the bottom since its edges are not confined beneath the lasting margin. The hole where the prongs are struck out of the shank piece in this case permits flow of the bottom-forming composition through the shank piece sufficiently to provide an interlock between the shank piece and bottom. This interlock may, of course, be enhanced by providing additional holes and/or applying adhesive to the bottom side.

Similarly, it may be desirable to use a tuck as shown in FIG. 8 without a metal shank piece and this may be accomplished by fastening a plurality of prongs 24' along the opposite edges of the tuck so that when the tuck is placed against the bottom of the last the lasting margin may be held against the bottom by looping loops of the lasting string about these prongs. As shown, the tuck has along its opposite edges openings 34' to assist in anchoring it in position.

As pointed out heretofore, loops of the string 16 or loops of the stitching 14 may be looped about the prongs whichever is the most convenient for the purpose of holding the lasting margin snugly in place.

While the invention as herein illustrated discloses the use of prongs, equivalent means may be employed about which the lasting string or lasting stitching are engaged at the shank portion of the bottom for holding the lasting margin constricted in this area. Moreover, it is within the

scope of the invention to employ bottom members at any part of the bottom of the shoe provided with prongs or their equivalent about which loops of the lasting string may be caught to hold the lasting margin snugly in place, particularly along depressed or curved portions of the bottom, where the lasting margin tends to bridge rather than closely follow the curvature.

It should be understood that the present disclosure is for the purpose of illustration only and that this invention includes all modifications and equivalents which fall within the scope of the appended claims.

We claim:

1. For string-lasting an upper to a last preparatory to attaching an outsole thereto by injection molding; a combination tuck and shank piece adapted to be placed flat against the bottom of the last with its longitudinal edges situated between the margins of the upper and the bottom of the last, said piece containing locating holes adjacent its opposite ends for engagement with gauge pins at the bottom of the last, and containing along its opposite edges longitudinally spaced, longitudinally elongated holes, and a plurality of prongs spaced longitudinally of the piece, said prongs being attached to said piece and constituting stakes about which loops of the string-lasting are adapted to be caught to hold the upper flat against the bottom of the last.

2. A combination tuck and shank piece according to claim 1, wherein there are two rows of prongs arranged in spaced parallel relation inwardly of the elongated holes.

3. The method of string-lasting an upper to a last preparatory to attaching an outsole thereto by injection molding, comprising mounting an upper having means along the edge of its lasting margin in the form of overedge stitching and a draw string drawn through the overedge stitching, pulling the draw string tight to constrict the lasting margin, providing a combined tuck and shank piece containing locating holes at its opposite ends, containing along its opposite edges longitudinally elongated holes adapted to receive interlocking portions of the bottom forming composition during injection molding of the bottom, and containing a plurality of prongs spaced longitudinally of the piece, placing said piece against the bottom of the last with its longitudinal edges underlying the constricted lasting margin with the elongated holes located inwardly of the overlapping lasted margin and with the locating holes at its ends engaged with the gauge pins at the bottom of the last, and looping loops of the draw string and/or the overedge stitching over said prongs.

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JORDON FRANKLIN, *Primary Examiner.*

P. D. LAWSON, *Assistant Examiner.*