

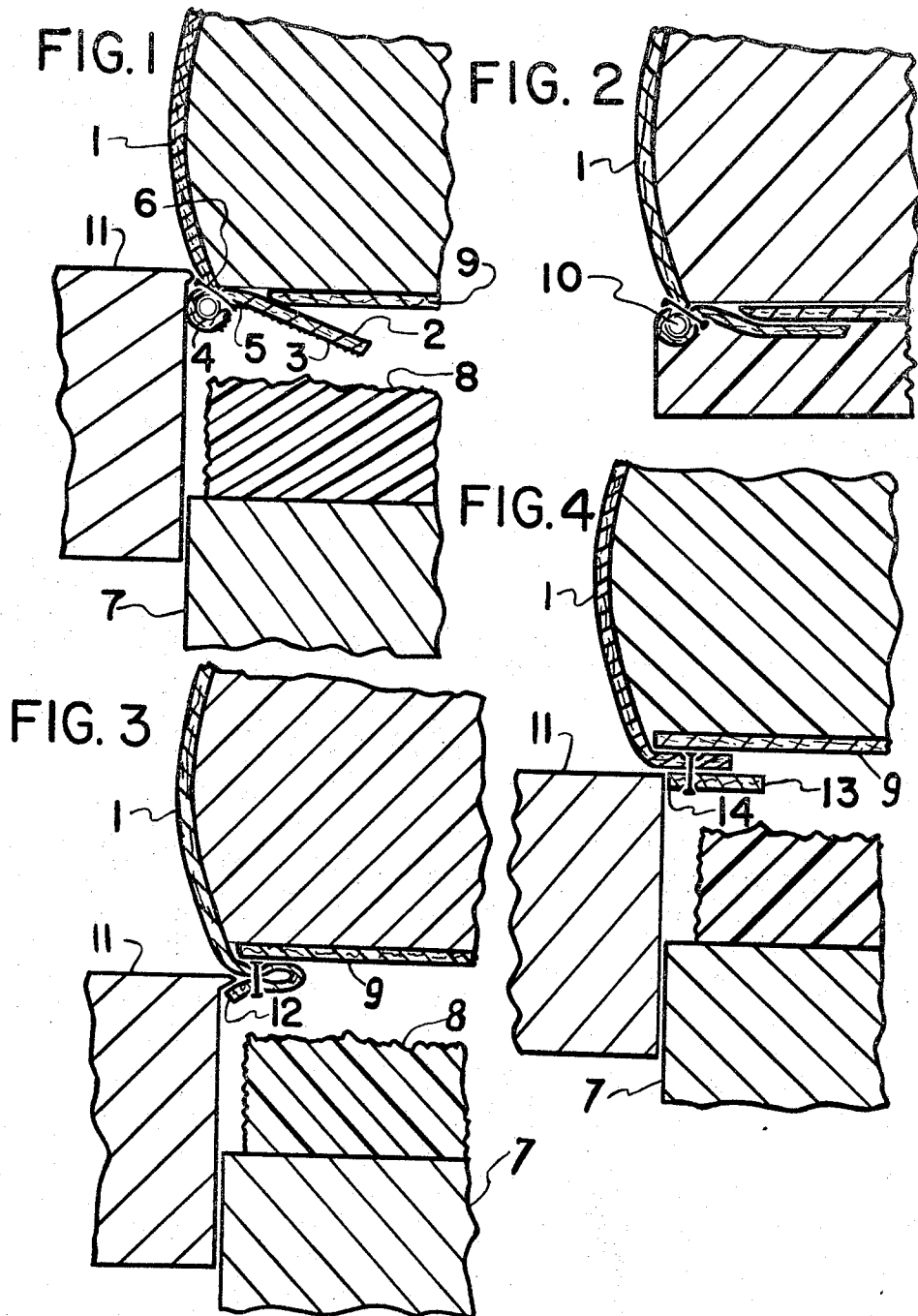
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FOOTWEAR AND METHOD OF ITS MANUFACTURE

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FOOTWEAR AND METHOD OF ITS MANUFACTURE

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ABSTRACT OF THE DISCLOSURE

Weltless footwear wherein an upper of leather and an outsole of elastomeric material are bonded to each other and the footwear has an abutment at the juncture of the upper and sole which is held in place by a row of stitching and the abutment has a rough surface and forms the upper outer edge of the sole. An extension of the upper extends inwardly and is, along with at least a portion of the abutment, located entirely within the confines of the sole face of the upper and the sole covers the rough portion of the abutment.

The method of manufacturing weltless footwear by forming a sealing abutment at the bottom margin of the upper by a row of stitching and providing an extension of the upper beyond the stitching and temporarily holding the sealing abutment at the bottom of a last while the upper is on a last and placed in a side frame and releasing the sealing abutment after the side frame of the shoe mold is placed adjacent the sealing abutment to permit the latter to move into sealing engagement with the side frame and wherein the extension and at least a portion of the abutment are within the confines of the sole face of the last and side walls of the mold after which pressure is applied on the elastomeric material which is in the mold to force the sealing abutment into tighter sealing engagement with the side frame resulting in the bonding of the bottom margin of the upper and the extension to the elastomeric material.

The invention refers to the manufacture of shoes and similar footwear with uppers of leather or similar material, and soles containing elastomeric material molded and cured in contact with and to the upper.

It is customary to roughen the margin of the upper where it is to contact the elastomeric material, as the latter does not adhere reliably to a smooth surface. Such roughening has to be carried out after the usual lasting of the upper on a wooden last and presents a costly and very sensitive operation.

After such lasting and roughening, the shoe has to be removed from the wooden last and placed on the metal last of the sole molding device. The metal frame of the mold has to be pressed strongly against the upper to prevent escape of rubber or other elastomeric material along the mold edge.

One object of the invention is to eliminate the roughening after the lasting either by carrying it out before lasting or by eliminating the roughening operation entirely. Another object of the invention is to provide footwear of the kind described with a clear and preselected demarcation between the upper and the sole so as to prevent irregularities which easily damage the appearance of the finished footwear.

Still other objects of the invention referring to the footwear and its manufacture are clarified in connection with the drawing which shows

In FIG. 1 an enlarged cross section through the edge of the footwear, located in a mold, in the position at the beginning of the actual molding of the elastomeric material, while

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FIG. 2 shows the same shoe edge after removal from the mold,

FIGS. 3 and 4 show an alternative execution of the shoe edge.

Due to the unavoidable irregularity of natural leather the line separating the skived surface from the smooth surface of the leather is in itself irregular; it might deviate easily by $\frac{1}{16}$ inch. By providing a fold just including this line of separation it is assured that all of the lasting margin is roughened and that none of the roughened surface extends beyond the fold, as the fold consumes at least $\frac{1}{8}$ inch width of the leather.

In the manufacture of footwear according to FIG. 1 the margin 2 of the upper 1 is roughened at 3 when still flat, in any of the usual skiving machines, which guide the leather at the very edge of the margin. After the skiving a projection is formed by a fold 5 to form a ridge or bead 4 along the outline of the skived margin. As the stitching occurs only after the skiving, it is easy to follow the outline of the skiving in such manner that even a part of the bead still presents a skived surface, but none of the skiving extends beyond the bead.

The inner side of the lasting margin, as well as the corresponding margin of the usual insole 9 are coated with adhesive material which bonds under heat and substantial pressure. The so-prepared parts are then placed on the last of the sole-molding device, so that the lasting margin of the upper covers the insole 9. The lasting margin 2 of the upper 1 is temporarily held in place by metal clips or strings, until the side frame 11 of the molding cavity is placed and closed around the upper on the last, in contact with the bead 4. The clips are then removed or the strings cut so that the bead, through the tension of the leather of the upper is held tightly against the cavity wall of the side frame. The sole containing elastomeric material is then formed, either by injecting the elastomeric material into a closed cavity, or by placing sole material 8 into the mold cavity and exerting pressure from the outside by the movement of a bottom plate 7, as shown in FIG. 1, or finally by creating pressure within the elastomeric material through the influence of heat or chemical reaction. In each case the molding pressure of the elastomeric material will press the bead or ridge against the cavity wall and seal the cavity against the outside, preventing thereby local escape of elastomeric material. Hitherto such spew had to be removed in costly hand operations and left nevertheless unsightly irregularities.

In many cases it will be preferable to fold, as shown in FIG. 3, the bottom margin of the upper 1 outwardly, so that the bead 4 as well as the protruding edge 12 of the upper margin present towards the elastomeric material the flesh side of the leather. Again, the pressure of the elastomeric material will create sufficient sealing pressure between the edge 12 and the mold wall. The demarcation line between upper and sole is in this case established by the bight leading to the stitching 6. The embedding of the bead in the elastomeric material secures a further improvement of the bond between sole and upper.

In some cases when the leather of the upper cannot be folded easily, it might be preferred to provide the stitching 6 through the margin of the upper and a separate strip 13, as shown in FIG. 4. The stitching is provided close to the outer edge of the strip 13 so that the pressure of the elastomeric material cannot deflect the edge 14 of the strip from the sealing contact with the mold wall.

The finished article, as removed from the mold is improved by the presence of the strip of bead 4. This strip improves the appearance by the elimination of irregularities and by improving the bond between sole and upper by the embedding of the bead in the elastomeric material.

In the method of manufacture the strip or bead brings not only the advantage in cost reduction in that the skiving

or other roughening can be carried out before lasting, as a less expensive operation, but the strip or bead is highly effective in sealing the mold cavity without the strong pressure of the edge against the upper. This pressure to secure adequate sealing is often so strong as to deface or even damage the leather of the upper.

As described above, the elastomeric pressure is used to bond the material to the roughened surface of the bottom margin and simultaneously to press the bead or strip against the mold wall to seal the mold cavity. If an insole is used as described, the pressure of the elastomeric material is further used for a third purpose, the bonding of the lasting margin to the insole in the sole molding device, in a single operation with the molding and curing of the sole. Such securing of the insole to the lasting margin will occur already by the fact that both insole and lasting margin are bonded to the same layer of elastomeric material; the adhesive connection will not only prevent curling of the edges of the insole, but will add also to the strength of the lasting, and this without additional lasting costs.

Without any substantial increase in costs, a core can be placed in the bead while stitching the seal. Such core might be a string used to tighten and hold the upper on the last of the sole molding device before placing the side frame of the mold against the bead, or spring wire might be placed into the bead to remain there permanently.

Having thus described the invention, what is claimed and desired to be secured by Letters Patent is:

1. Method of manufacturing weltless footwear comprising forming a sealing abutment at the bottom margin of the upper by a row of stitching with an extension of the upper beyond said row of stitching, placing the upper on the last of a shoe mold having a side frame, temporarily holding under tension the sealing abutment at the bottom of the last, positioning the side frame of the shoe mold adjacent to the sealing abutment, releasing tension on the sealing abutment to permit it to move outwardly into sealing engagement with the side frame with said extension and at least a portion of said abutment within the confines of the sole face of the last and the side walls of the mold, applying pressure on elastomeric material placed within the mold to force the sealing abutment into tighter sealing engagement with the side frame and bonding the bottom margin of the upper and said extension to the elastomeric material.

2. The method as set forth in claim 1 wherein the outer surface of the bottom margin of the shoe upper which will be contacted by the elastomeric material is

roughened before the formation of the sealing abutment.

3. The method as set forth in claim 1 wherein the sealing ridge is formed by stitching a fold in the bottom margin of the upper.

4. The method as set forth in claim 1 wherein the sealing ridge is formed by stitching a strip of material to the bottom margin of the upper.

5. The method as set forth in claim 1 wherein said bottom margin of the upper is placed on said last over an insole so as to bond said elastomeric material simultaneously to said margin and said insole.

6. Weltless footwear comprising an upper of leather and an outsole of elastomeric material bonded and cured directly to said upper, said footwear having an abutment at the juncture of said upper and sole, a row of stitching through the bottom margin of said upper securing said abutment in place, said abutment having a rough surface, said abutment forming the upper outer edge of said sole, and an extension of the upper extending inwardly toward the center of said sole and beyond said row of stitching, said extension and at least a portion of said abutment being entirely within the confines of the sole face of the upper, said sole being molded and cured directly to said extension and said abutment and covering the rough portion of said abutment, the outer edge of the rough portion of said abutment and sole terminating at said juncture.

7. Footwear as set forth in claim 6 wherein a fold of the bottom margin of said upper constitutes said abutment.

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