

[54] FOOTWEAR

[72] Inventor: **Curt E. Kaufman**, Waynesville, N.C.

[73] Assignee: **Ro-Search, Incorporated**, Waynesville, N.C.

[22] Filed: **April 22, 1970**

[21] Appl. No.: **38,634**

Related U.S. Application Data

[60] Division of Ser. No. 846,019, July 30, 1969, Pat. No. 3,577,858, and a continuation-in-part of Ser. No. 794,333, Jan. 27, 1969, Pat. No. 3,562,930, which is a division of Ser. No. 521,247, Jan. 14, 1966, Pat. No. 3,473,178.

[52] U.S. Cl.12/142 RS

[51] Int. Cl.A43d 9/00

[58] Field of Search12/142 R, 142 RS; 36/14

[56] References Cited

UNITED STATES PATENTS

2,651,118 9/1953 Root12/142 RS

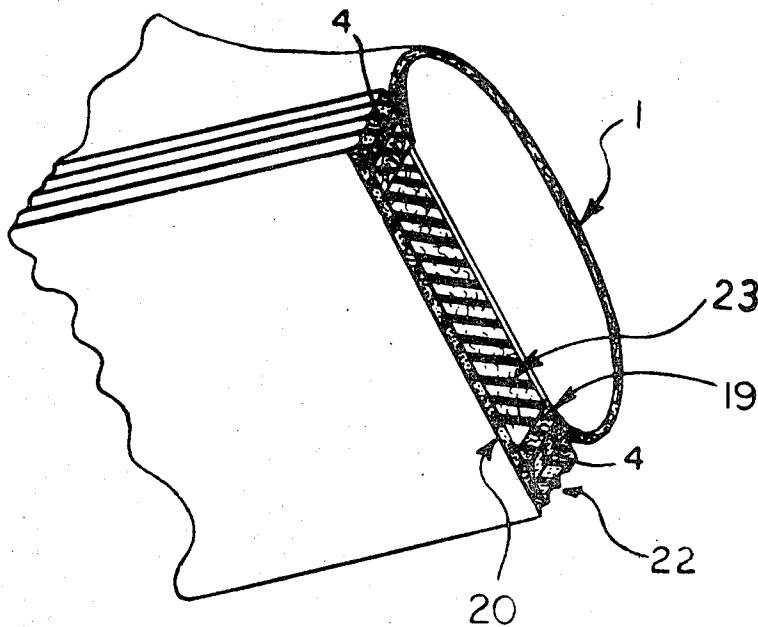
2,789,295 4/1957 Rollman et al.12/142 RS
3,047,890 8/1962 Bingham12/142 RS

Primary Examiner—Patrick D. Lawson
Attorney—Dos T. Hatfield

[57] ABSTRACT

Footwear such as shoes, boots, etc. having a welt at its lower margin to which a prepared sole, usually of sheet stock, is fastened having a ribbon of elastomeric material molded and cured in situ along the inner perimeter of the welt so as to provide a stepless transition inside of the shoe from the upper to the sole. Such shoes having soles of soft material, such as micro-cellular elastomer, and also a stabilizing insert and the ribbon of elastomer is molded to secure the insert in its desired location to provide the stepless transition from the inside of the upper to the sole. The method of manufacture of such footwear by holding the pre-welted upper under tension on the last of a sole laying device until after closing of the side frame of said device so that by releasing said tension, the welt is forced into sealing engagement with the side wall of said side frame.

1 Claim, 4 Drawing Figures



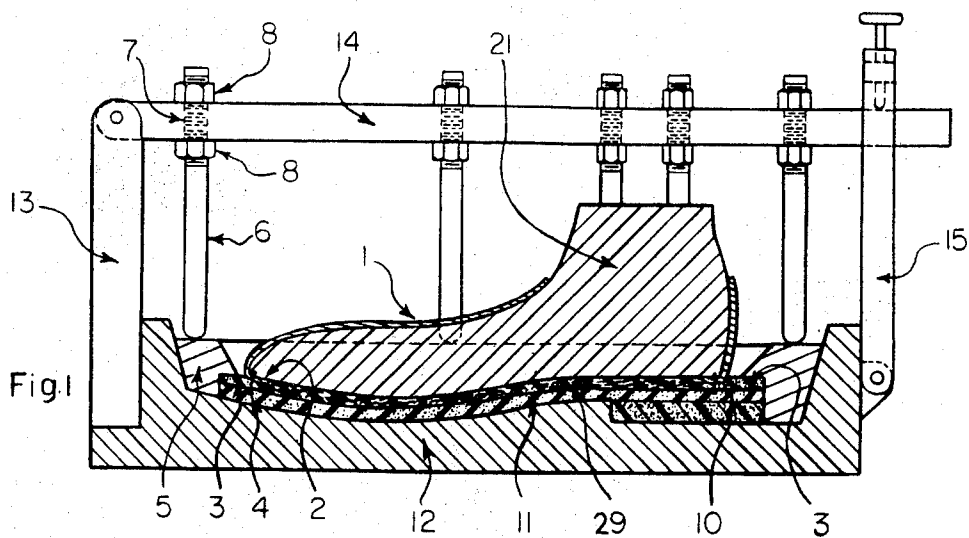


Fig. 2

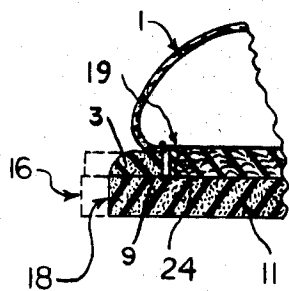


Fig. 3

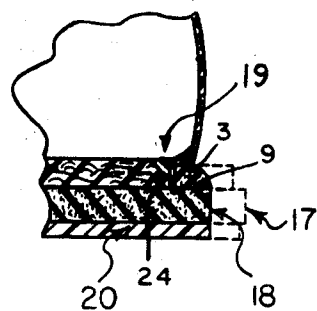
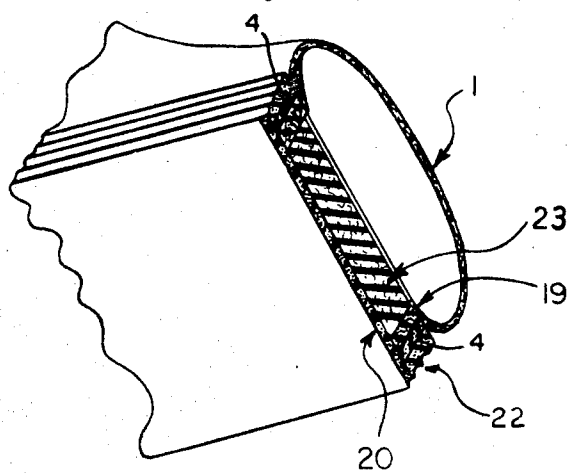


Fig. 4



FOOTWEAR

This application is a division of application Ser. No. 846,019 filed July 30, 1969, now U.S. Pat. No. 3,577,858, and a continuation-in-part of my pending application, Ser. No. 794,333 filed Jan. 27, 1969, now U.S. Pat. No. 3,562,930, as a divisional application of Ser. No. 521,247 filed Jan. 14, 1966, now U.S. Pat. No. 3,473,178.

The invention refers to footwear such as shoes with an upper of leather or similar material and a prepared sole, usually of sheet stock, secured thereto.

According to the invention, such shoes are improved by providing a stepless transition between the inside of the upper and the sole by means of a ribbon of elastomeric material molded and cured in situ, providing thereby at the same time, additional fastening of the upper to the sole.

Other features of the invention are clarified hereafter in connection with the drawing, which shows in

FIG. 1 a cross section of a shoe according to one execution of the invention, still in a sole-laying device after completion of the sole-laying and before removal of the finished shoe from said device.

FIG. 2 shows in a larger scale a cross section through the toe and

FIG. 3 a cross section through the heel of such shoe.

FIG. 4 shows a view partially in section of still another execution of the invention.

In the manufacture of a shoe according to the example shown in FIG. 1, the upper 1 is prepared by stitching together pieces of leather and at the bottom margin 2 of the upper a welt 3 is fastened by a stitching 4. The welt in this example consists of micro-porous rubber with small, closed cells. The so prepared upper is placed on the last 21 of a sole-laying device and tightened thereon by means of threads or clamps. Thereafter the side frame 5 is placed surrounding the welt 3 and closed. Then the clamps are removed or the threads cut to release the tension of the upper 1 at least partially to move the welt outwardly into tight engagement with the side walls of the frame 5. A previously prepared sole 11 is placed into the cavity of the bottom plate 12 after heat-setting cement is applied to the bottom surface of the welt 9 and the corresponding surface 10 of the sole, and a ribbon 19 of moldable elastomer such as uncured rubber is placed against the inner perimeter 24 of the welt 3. The upper on the last is thereafter pressed against the sole in the bottom plate by means of the closing lever 15 acting on the lever 14 which carries the last 21 as well as the push rods 6 adjustable by means of the threaded parts 7 and the lock nuts 8. The upright 13 secures the lever 14 hingeably to the base plate 12. The base plate 12 and the last 21 are, as usual for such devices, heated so as to obtain the

setting of the cement. According to the invention, the ribbon 19 of elastomeric material such as uncured rubber is molded and cured under the forementioned heat and pressure to fill the spaces between the last, the sole and the edge of the margin of the upper to form a stepless transition between upper and sole, as well as providing an additional bond between upper and sole. The customary lasting insole can be eliminated, which renders the shoe lighter and more flexible. The stepless transition from upper to sole renders the shoe more agreeable to the foot of the wearer.

As shown in FIGS. 1 to 3, inclusive, a layer 29 might be placed between the last 21 and the sole 11, inside of the perimeter of the welt 3. If the welt 3 and the sole 11 are, as I prefer, of the same micro-porous elastomer, the ribbon 19 of elastomer molded and cured in situ will also secure the layer 29 in its position. This layer 29 is customarily of a soft cushion type. If the sole 11 is itself of relatively soft material, I provide contrary to the custom, a relatively rigid insert 23 which stabilizes the foot of the wearer in the shoe. As example, if the sole 11 is micro-porous, soft rubber, the layer 23 is a blank cut from sheet stock of regenerated rubber filled with fiber.

If desired, the shoe might be provided, in addition to the sole 11, with a tread sole 20, as shown in FIG. 3.

After removal of the shoe from the sole-laying device the side 16 of the sole might be trimmed to a desired contour 18, as shown in FIG. 3 and FIG. 2, or the side wall of the side frame 5 might be profiled so as to impress the corresponding pattern upon the side of the sole as shown in FIG. 2 at 22.

The stabilizing insert 23 is selected to be stiff enough to eliminate the transmission of the local pressure caused by stepping on a single pebble to the foot of the wearer, and to prevent the side-slipping of the foot.

What I claim is:

1. Method of manufacture of footwear comprising stitching a welt to a shoe upper, placing said upper on the last of a sole laying device, temporarily tightening said upper on said last, placing the side frame of said sole-laying device against said welt and closing it, releasing at least partially the tension of said tightened upper to force said welt into sealing engagement with the side wall of said side frame, placing a ribbon of moldable and curable elastomer against the inner perimeter of said welt and a pre-cement-coated sole against the shoe bottom, and using the heat and pressure of said sole-laying device to fasten said sole to said upper and welt while simultaneously molding and curing said ribbon of elastomeric material to form a stepless transition on the inside of the shoe between said upper and said sole which also adds a bond between said upper and said sole.

* * * * *

50

55

60

65

70

75