Aug. 11, 1953 D. GAROFALO 2,648,080

SHOE CONSTRUCTION AND METHOD OF MAKING THE SAME

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Fig. 1.

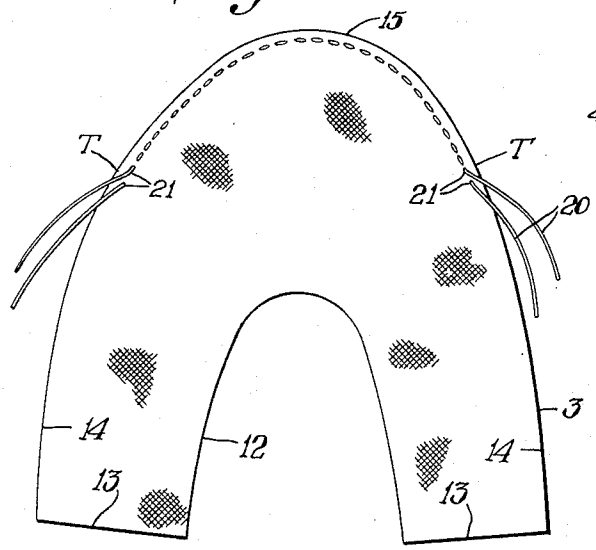


Fig. 2.

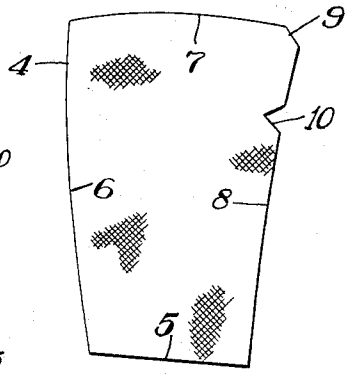
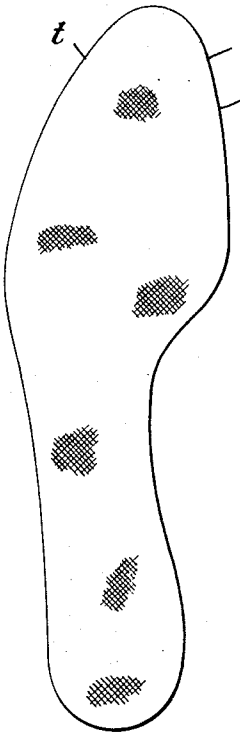


Fig. 3.



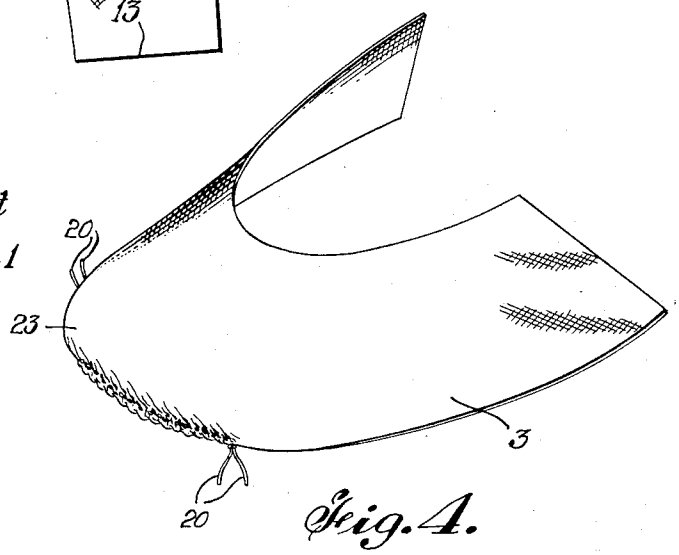


Fig. 4.

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Fig. 5.

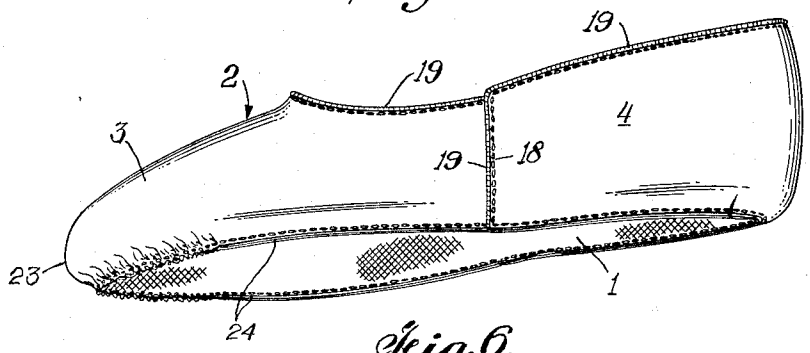


Fig. 6.

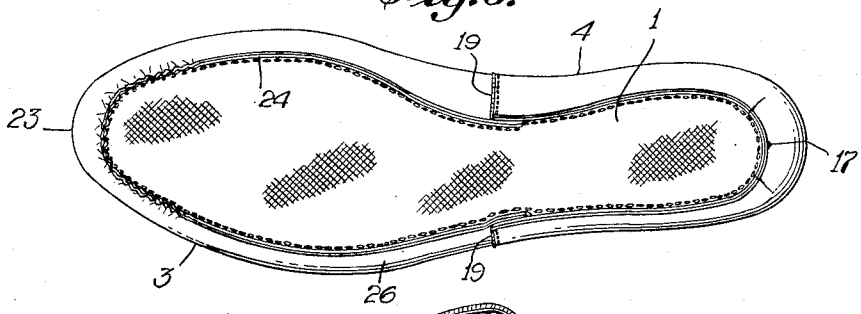


Fig. 7.

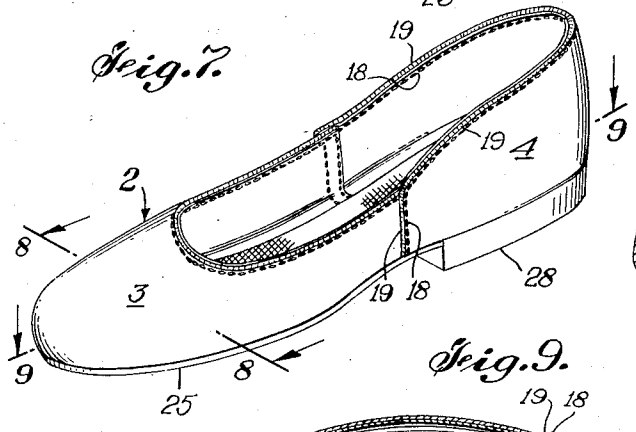


Fig. 8.

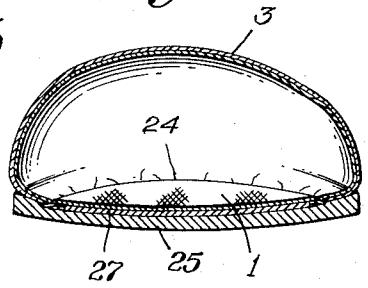
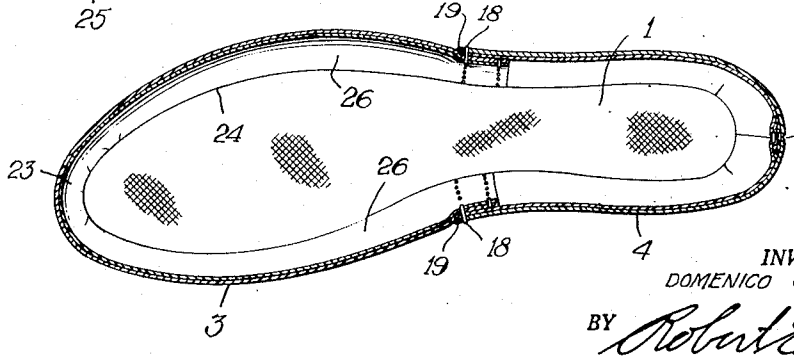


Fig. 9.



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UNITED STATES PATENT OFFICE

2,648,080

SHOE CONSTRUCTION AND METHOD OF MAKING THE SAME

Domenico Garofalo, New York, N. Y.

Application August 25, 1951, Serial No. 243,627

3 Claims. (Cl. 12—142)

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The present invention relates to a method of making shoes, particularly shoes having closed toes and cemented soles.

Making a shoe with a closed toe involves problems that are not encountered in making open-toed shoes. The toe portion of a shoe has double curvature and, particularly in ladies' shoes, the radius of curvature is quite small. As the vamp of a shoe is ordinarily made from flat sheet material such as cloth, plastic or leather, it is difficult to form this flat sheet material into a shape of double curvature. If, in trying to shape the toe portion of the vamp, the material is unduly stretched, it may be torn or weakened. Moreover, the excess material in the edge portion of the vamp tends to form wrinkles which are not only unsightly but may also be uncomfortable by causing protuberances that press on the wearer's toes. Heretofore, it has been up to the individual shoemaker to try to shape the toe portion of the upper as best he can when placing the upper on a last preparatory to receiving the sole. This operation, if done properly, has required a considerable amount of time and skill, thus entailing corresponding expense. If, on the other hand, the forming of the toe has not been done skillfully, the result has been defective or inferior shoes.

It is an object of the present invention to provide a method of making shoes, and particularly a method of forming the toe portions of shoes having closed toes, whereby the shoes can be made easily and rapidly without any great amount of skill being required while, at the same time, assuring the production of uniformly high grade shoes. The method in accordance with the invention makes it possible to increase the rate of production and decrease the cost of the shoes while, at the same time, improving their quality.

The objects and advantages of the invention will be more fully understood from the following description of the method in accordance with the present invention in conjunction with the accompanying drawings which illustrate the method steps and the finished shoe.

In the drawings:

Figs. 1, 2 and 3 are plan views of the vamp, quarter and insole, respectively, used in making a shoe in accordance with the present invention.

Fig. 4 is a perspective view of the vamp after its toe portion has been gathered in accordance with the invention to form a toe pocket.

Figs. 5 and 6 are a perspective view and bottom view, respectively, of the assembled upper and

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insole before the outsole and heel are attached.

Fig. 7 is a perspective view of the finished shoe.

Fig. 8 is a cross-section of the shoe taken approximately on the line 8—8 in Fig. 7.

Fig. 9 is a horizontal section taken on the line 9—9 in Fig. 7 and showing, in plan view, the side of the shoe.

The method in accordance with the invention comprises the step of forming an insole and an upper, pre-shaping the upper by gathering the peripheral margin of the toe portion to form a toe pocket, stitching the peripheral edge of the pre-shaped upper to the peripheral edge of the insole, lasting the assembled insole and upper with the seams joining them disposed some distance inwardly from the peripheral edge of the bottom of the last and thereafter applying the outsole and the heel, if any.

The insole 1 is cut, stamped, or otherwise formed, from suitable sheet material such as leather, fabric or plastic. The material may be single-ply or multiple-ply and, in the latter case, the plies may be of the same or of different material. For example, the insole may be formed of two layers of cloth or a layer of cloth and a layer of leather. The insole is cut accurately to a predetermined size and shape, according to the shoe being made. It is of the same general shape as the outsole but substantially smaller so that, when the two are assembled, a marginal portion of the outsole extends out beyond the sides and toe portion of the insole, as illustrated in Figs. 8 and 9.

The upper 2 is made of one or more pieces of flat sheet material such as leather, fabric or plastic. The material may be single-ply or multiple-ply, as desired. For example, the upper may be formed of leather lined with fabric or may be formed of fabric lined with leather or plastic. Where two or more plies are used, they may be secured together, for example by adhesive or decorative stitching, or they may be joined only along their edges by the stitching hereinafter described. The number of pieces in which the upper is made and the shapes and sizes of these pieces will depend on the style and size of the particular shoe being made. In the embodiment shown by way of example in the drawings, the upper 2 is made up of three parts, namely a vamp 3 (Fig. 1) and two quarters 4 (Fig. 2). In this particular style, each of the quarters 4 is an approximately rectangular or trapezoidal-shaped piece having a front edge 5, upper edge 6, rear edge 7 and bottom edge 8. At the junction of

the rear edge 7 and bottom edge 8, the corner is cut off at an angle, as indicated at 9. In the lower edge 8, a short distance from the rear edge 7, there is formed a V-shaped notch 10.

For the style of shoe illustrated in the drawings, the vamp 3 is an approximately horseshoe-shaped piece having a curved upper edge 12, rear edges 13, lower side edges 14 and a curved toe portion 15 extending approximately between the two points marked T. The curvature of the toe portion 15 is substantially greater than that of the lower side edges 14. The vamp 3 and the quarters 4 are preferably cut from sheet material on a clicking machine using appropriate cutting dies so that rapid production is possible. They are cut accurately to size and shape for the particular shoe being made, so that no subsequent trimming or paring is required. The waste of material incident to trimming is thereby avoided.

After the several parts of the upper are cut out to predetermined shape, as described above, they are joined together, for example by cementing or sewing. In the particular embodiment illustrated in the drawings, the rear edges of the two quarters 4 are joined by a seam 17 (Fig. 6) and the front edges 5 of the quarters are joined to the rear edges 13 of the vamp by seams 18, Fig. 5). The upper edges of the vamp and quarters and, in the present instance also the front edges of the quarters, are suitably finished, for example by a binding 19. It will be understood that, for some styles of shoes, the quarters are not joined to the vamp. Moreover, if desired, the shoes may have open heels instead of the closed heel shown.

Prior to the step of joining the upper to the insole, the upper is pre-shaped to approximately its ultimate form and, in particular, the marginal edge of the toe portion of the vamp is gathered to provide an accurately pre-formed toe pocket. As illustrated in Figs. 1 and 4, the gathering of the toe is effected by means of a double-strand thread 20 which extends around the toe close to the edge with a running stitch in and out opposite sides of the material. When a double-strand thread is used as shown, the two strands are preferably brought out at slightly spaced points 21, as clearly shown in Fig. 1. By pulling on the ends of the thread 20, the toe portion of the vamp is shirred or gathered, as shown in Fig. 4, to form a toe pocket 23 of double curvature. Moreover, the formation of the toe pocket 23 tends simultaneously to shape the whole vamp to approximately the shape it will have in the finished shoe.

When the vamp 3 is in its initial flat form, as shown in Fig. 1, the peripheral edge of the toe portion 15 between the points T—T is of substantially greater length than the peripheral edge of the corresponding toe portion of the insole between the points *t*—*t*. The entire lower peripheral edge of the upper is likewise of substantially greater length than the entire peripheral edge of the insole. When forming the toe pocket 23 of the vamp by means of the draw-thread 20, the edge is drawn up so that the edge of the toe portion 15 of the vamp is substantially equal to that of the corresponding edge portion of the insole. Hence, when the insole and vamp are brought together and joined, as described below, they fit one another accurately and can be joined without need of manipulating the edges to make them match up.

After the peripheral margin of the toe portion of the vamp has been properly gathered, as described above, to form the toe pocket 23, the ends of the thread 20 are tied to hold the gathered portion securely. In the form illustrated in the drawings, this can be done very easily by tying the two strands together at each end. Since the two strands are brought out at separated points 21, this assures that the threads are held securely. The gathering of the peripheral margin of the toe portion of the vamp may be effected with any suitable stitch either by hand or by machine. For example, a suitable shirring machine may be used. Particularly when a machine is used, the gathering and stitching of the edge portion may be effected simultaneously, the machine being set to give the amount of gathering required. It will be understood that, however formed, the gathers are held securely in place so that the length of the peripheral edge, after gathering, is the same as the length of the corresponding peripheral edge of the insole and cannot stretch or give appreciably to destroy this relationship. Moreover, the gathers are small and uniform, so that there is an even distribution of the material.

After the upper has been pre-shaped to form the toe pocket 23, as described above, the lower peripheral edge of the upper is sewed to the peripheral edge of the insole by a seam 24. For example, this may be done by laying the inner face of the upper on the inner face—i. e. upper face—of the insole, with edges even, and stitching straight through the insole and upper close to the edge, the stitching being effected progressively around the insole and upper. This provides a smooth seam on the inside of the shoe while the edges of the insole and the upper project downwardly. The gathered edge of the toe portion of the vamp is stitched to the corresponding edge of the insole in exactly the same manner as around the rest of the periphery. The tied thread 20 holds the gathers firmly and prevents any distortion of the gathered edge that would interfere with the proper mounting of this edge with the corresponding edge of the insole. When stitching around the heel portion, the edges of the notches 10, and also the notch formed by the two beveled corners 9, are brought together, as shown in Fig. 6, to assist in shaping the heel portion. The edges of the notches can, if desired, be stitched together before the upper is joined to the insole, but this is ordinarily not necessary.

After the upper and the insole have been joined, as described above, the assembled upper and insole are forced onto a last. The bottom of the last is substantailly larger than the insole so that the marginal portions of the upper are pulled in over the bottom surface of the last, as indicated by the shape of the upper shown in Figs. 6, 8 and 9. The lasting of the shoe smoothes out the gathered portion of the vamp forming the toe pocket so that the toe portion of the vamp is perfectly smooth and even the gathers around the marginal edge of the toe portion are smoothed out. After the insole and upper have been lasted, the outsole 25 is secured by cement to the insole and to the inturned marginal portions 26 of the upper. The pressure used in applying the outsole tends to flatten the seam 24 between the insole and the upper and further tends to smooth out the gathered marginal edge portion of the vamp. If desired, a layer of suitable filling material 27 can be inserted between the insole and the outsole, it being understood that, in speaking of the out-

sole being adhesively secured to the insole, this may be either with or without interposed filling material. A steel or other shank piece, such as is commonly used, may likewise be interposed between the shank portions of the outsole and the insole. A heel **28** may be applied wtih adhesive or otherwise, as desired. It will be understood that the invention is equally applicable to low heels, high heels, intermediate heels or platform-type shoes.

It will be seen that, by using the method in accordance with the invention, high quality shoes can be readily and economically manufactured. The shoes are particularly strong and well built since the upper and insole are joined throughout by stitching so that the uppers cannot pull loose. The pre-forming of the toe pocket before the upper is attached to the insole assures smooth toes of uniformly good appearance. Moreover, the method in accordance with the invention eliminates variation in the shoes owing to differences in the skill of the workman since no great amount of skill is required. The method in accordance with the invention is particularly suitable for economical mass production of high grade shoes.

What I claim and desire to secure by Letters Patent is:

1. A method of making a shoe having a closed toe which comprises providing an outsole, providing an insole smaller than the outsole, providing a vamp of flat sheet material of predetermined shape and size for the shoe being made, including a rounded toe portion having a peripheral edge of substantially greater length than the corresponding edge portion of the insole, running a gathering thread along the edge of the toe portion of the vamp with in-and-out stitches, applying tension to said thread to gather the edge of the toe portion of the upper with small uniform gathers until its length is substantially equal that of the corresponding edge portion of the insole, stitching the edge of the vamp to the edge of the insole, forcing the assembled vamp and insole onto a last having a bottom surface substantially larger than the insole, so that a marginal portion of the vamp is pulled in over the bottom of the last, and affixing the outsole to the insole and adjacent marginal portions of the vamp.

2. A method of making a shoe having a closed toe which comprises providing an outsole, providing an insole smaller than the outsole, providing

a vamp of flat sheet material of predetermined shape and size for the shoe being made, including a rounded toe portion having a peripheral edge of substantially greater length than the corresponding edge portion of the insole, running a gathering thread along the edge of the toe portion of the vamp with in-and-out stitches, applying tension to said thread to gather the edge of the toe portion of the upper with small uniform gathers until its length is substantially equal that of the corresponding edge portion of the insole, tying the gathering thread to secure the toe portion of the vamp gathered, stitching the edge of the vamp to the edge of the insole, forcing the assembled vamp and insole onto a last having a bottom surface substantially larger than the insole, so that a marginal portion of the vamp is pulled in over the bottom of the last, and affixing the outsole to the insole and adjacent marginal portions of the vamp.

3. A method of making a shoe having a closed toe which comprises providing an outsole, providing an insole substantially smaller than the outsole, providing an upper including a vamp of flat sheet material of predetermined size and shape for the shoe being made, said vamp having a rounded toe portion with a continuous peripheral edge of substantially greater length than the corresponding edge portion of the insole, gathering the edge of the toe portion of the vamp with small uniform gathers and drawing said edge in to form a pocket in the toe portion of the vamp and to reduce the length of the edge of the toe portion of the vamp to a length substantially equal that of the corresponding edge portion of the insole, stitching the lower peripheral edge of the upper to the peripheral edge of the insole, forcing the assembled vamp and insole onto a last having a bottom face substantially larger than the insole, so that a marginal portion of the upper is pulled in over the bottom of the last, and cementing an outsole to the insole and adjacent marginal portions of the upper.

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