

Jan. 25, 1966

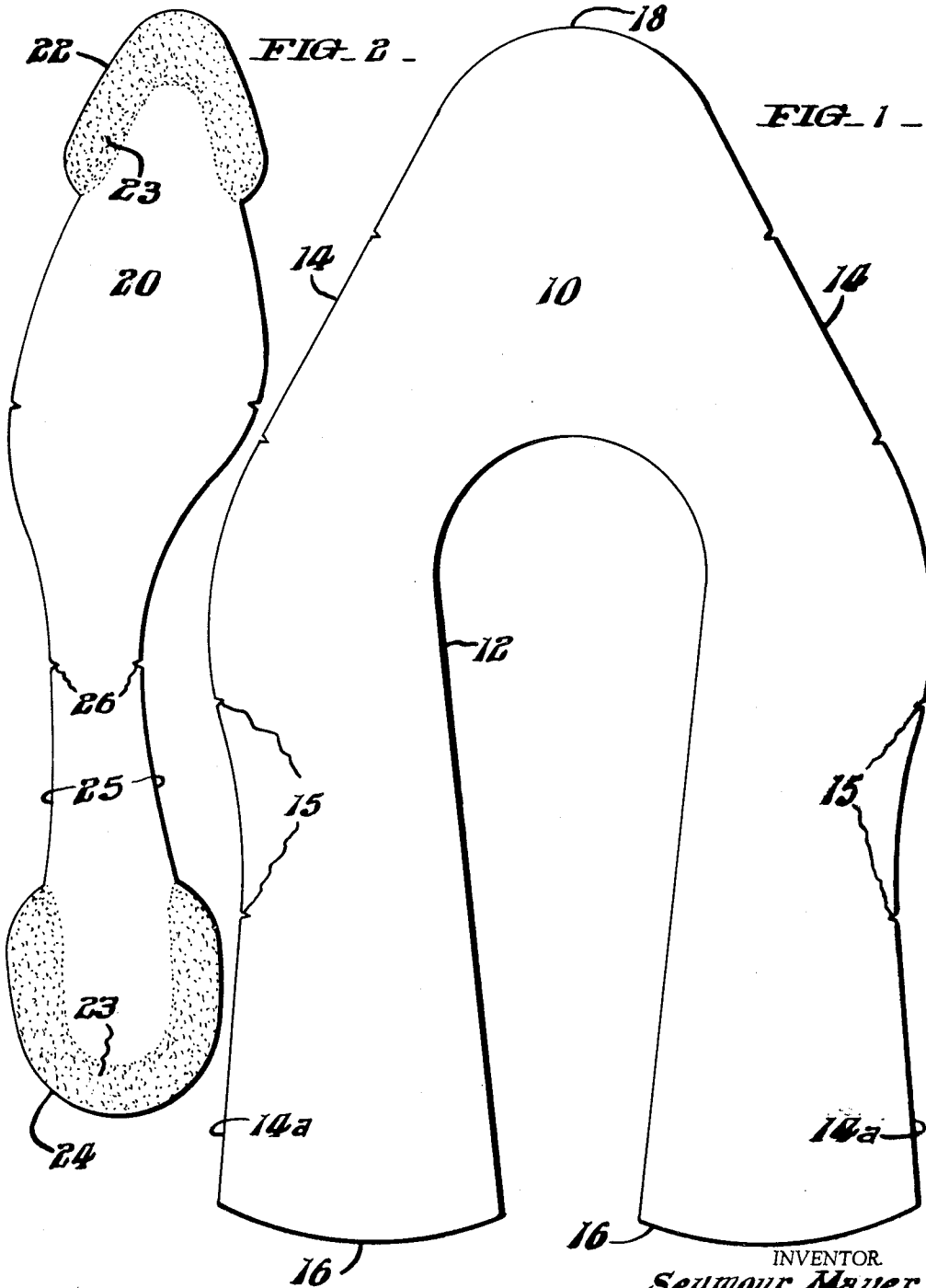
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3,230,559

METHOD OF SHOE CONSTRUCTION

Filed July 18, 1963

4 Sheets-Sheet 1



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4 Sheets-Sheet 2

FIG. 3 -

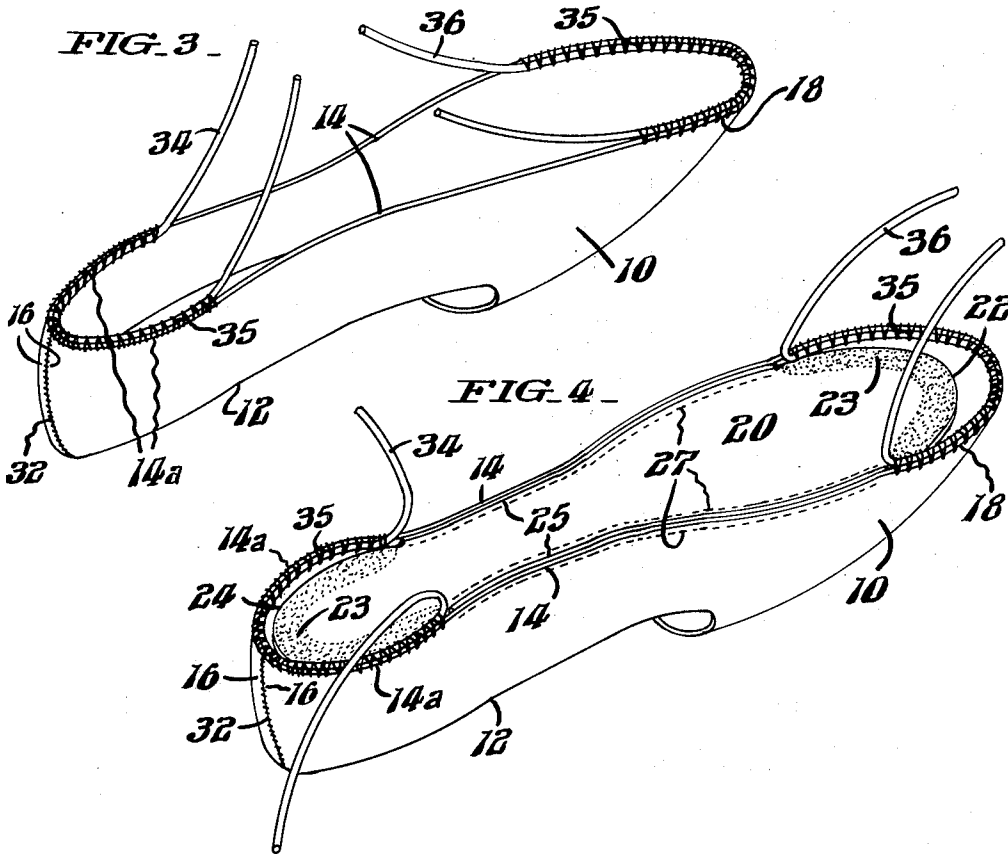
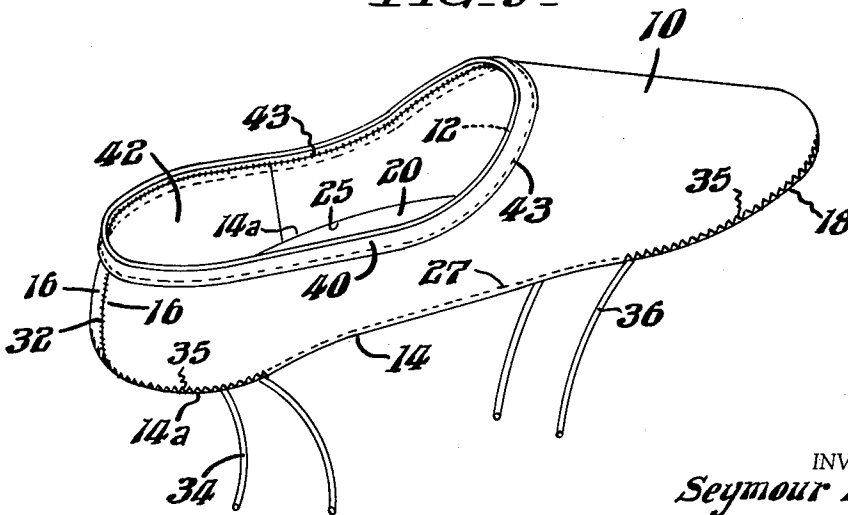


FIG. 5 -



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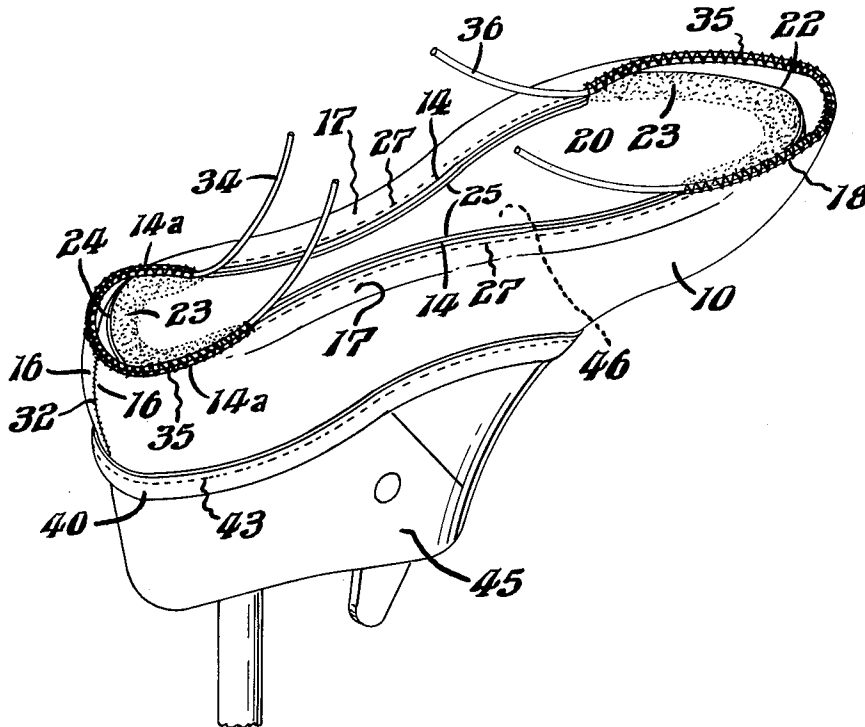
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4 Sheets-Sheet 3

FIG. 6



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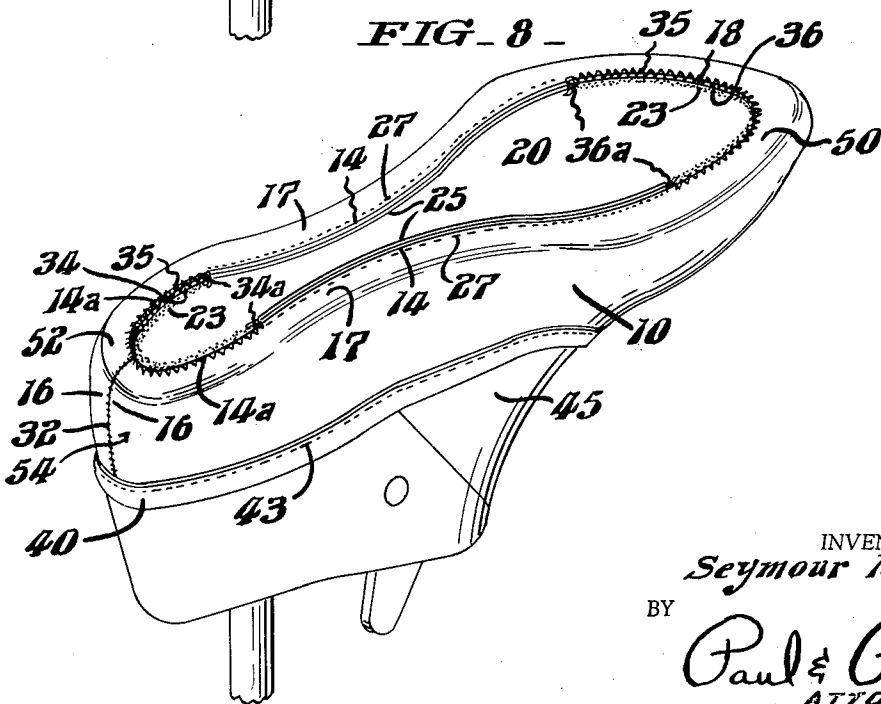
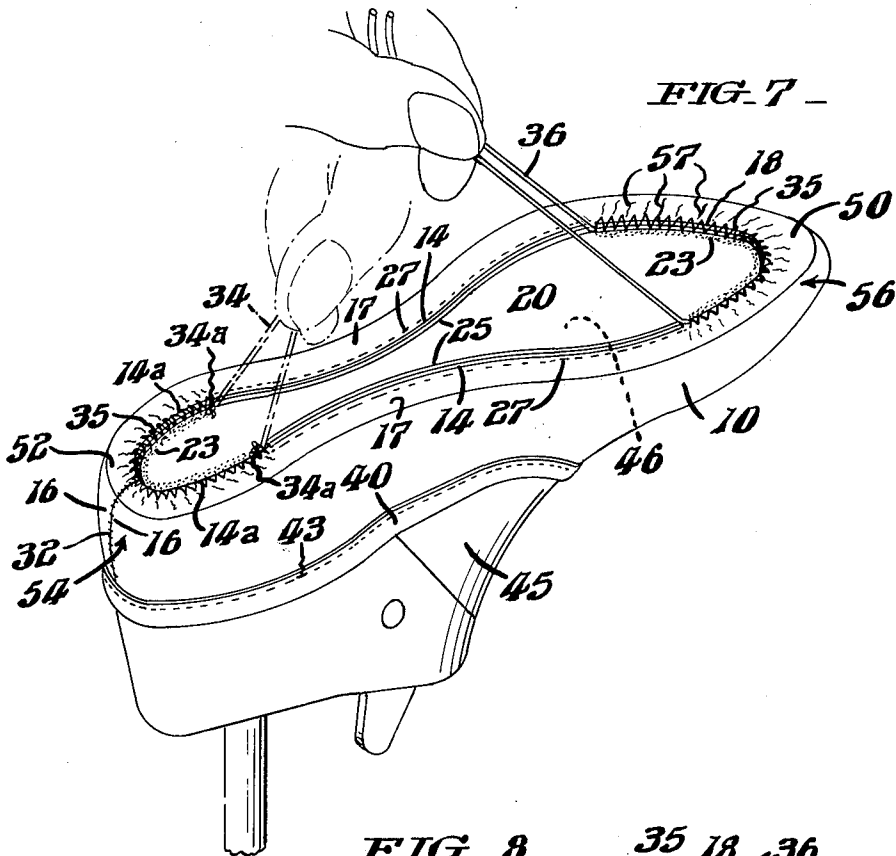
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METHOD OF SHOE CONSTRUCTION

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4 Sheets-Sheet 4



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1

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METHOD OF SHOE CONSTRUCTION

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1 Claim. (Cl. 12-145)

This invention relates to an improved method of shoe construction wherein the shoe upper having a closed toe is joined to the shoe insole by a process which combines the advantages inherent in both the slip-lasted and string-lasted methods, two well-known techniques for shoe manufacturers.

In the slip-lasted type of shoe, the body is manufactured without the use of a last or shaping member, being pre-formed of a material previously cut to size and stitched together by conventional sewing machine operations, the last being employed as a support, rather than as a forming member. An example of this technique is disclosed in U.S. Patent No. 2,484,743, issued to H. W. Rollman et al. on October 11, 1949.

The string-lasted method, in contrast, consists essentially of mounting the insole on a last and drawing the shoe upper over the last prior to joining the two members. A pair of drawstrings stitched to the edge of the upper are then tensioned so as to pull the edge of the upper over the top of the last and around the edges of the insole where it is stitched or held by adhesive. An example of this method and type of shoe construction is shown in U.S. Patent No. 1,757,537, issued to G. W. Miller on May 6, 1930.

The prior art also discloses a method of making shoes wherein a drawstring is used to form only the toe pocket in the upper with the upper and insole being completely stitched together before being pulled over a last which serves to partly shape the upper and provide support for mounting the outsole and heel. An example of this type of construction is shown in U.S. Patent No. 2,648,080, issued to D. Garofalo on August 11, 1953.

It is the primary object of this invention to provide and teach a simple, expeditious and effective method of joining the shoe upper to the insole and thereafter attaching an outersole to complete the shoe.

It is another object of this invention to provide a method of shoe construction wherein certain advantages inherent in two distinct prior art techniques of construction are brought together in a single method and wherein the toe and heel portion of the upper are correctly and smoothly shaped on a last even while the upper is partly joined to the insole prior to lasting. It is also an object of this invention to locate the seam joining the upper and the insole at a distance inward from the flat bottom edge of the shoe, so that the shoe is stronger and more comfortable for the wearer.

It is the primary advantage of the method of this invention that partial joining of upper and insole along the arch portion, first, and then shaping the toe and heel on a last produces a shoe of greater strength and shapeliness while requiring less time and care in preparation.

These objects and other attendant advantages will become more apparent from the detailed description herein and the drawings attached; wherein:

FIG. 1 is a plan view of the flat pattern which will form the upper or vamp of a right shoe;

FIG. 2 is a plan view of the flat pattern which will form the insole of a right shoe;

FIG. 3 is a perspective view of the upper upside down after the heel ends are stitched and the drawstrings added;

FIG. 4 is the perspective view of the upper after the insole is stitched thereto;

FIG. 5 is a perspective view of the upper and insole right side up;

2

FIG. 6 is a perspective view of the shoe pulled over a last;

FIG. 7 is a perspective view of the shoe on the last with the drawstrings tensioned; and

FIG. 8 is a perspective view of the shoe on the last after the upper and insole are completely joined and prior to adding the outsole.

The preferred method for forming the shoe of this invention comprises the steps of cutting an insole and an upper according to the correct pattern, stitching the heel ends of the upper together, stitching a pair of drawstrings along the bottom edges of the toe and heel portions of the upper, joining the insole to the upper by stitching along the center or arch portions of the upper, drawing the upper and insole over a last and tensioning the drawstrings so as to pull the peripheral portions of the upper over the edges of the insole thereby shaping the toe and heel and finally joining the toe and heel peripheral portions of the upper to the insole by adhesive.

Referring to FIG. 1 of the drawings, a shoe vamp or upper, identified by the numeral 10, is cut from suitable flat material substantially into the U-shape shown. The edge 12 extends along the center of the pattern and, subsequently, forms the top edge of the shoe while the edge 14, extending around the outside, is, subsequently, folded to join the insole forming the bottom of the shoe. The heel edges 16 will be joined to form the heel of the shoe while the adjacent edges 14a will join the insole along the heel portion of the shoe and the toe edge 18 will join the insole along the toe portion. The indentations 15 placed periodically around the bottom edge 14 of the upper serve as marks to indicate the correct relative position of the upper on the insole.

An insole 20, shown in FIG. 2, is substantially smaller in size than the upper 10 and is provided with an enlarged toe area 22 and an enlarged heel area 24. Otherwise, the insole is shaped similar to the bearing surface of the wearer's foot, however, it is somewhat narrower than the final outsole of the shoe. Both the heel and toe areas 22, 24 have an adhesive material 23 placed thereon which is preferably a thermo-plastic which binds when heat and pressure are applied. However, many other types of adhesive which are water proof and strong are suitable and these can be applied at any time prior to joining. A plurality of marking indentations 26 are also placed around the edge of the insole so that when the indentations 26 and 15 are aligned, the upper and insole are correctly positioned relative to one another. It should be noted, as more fully described below, that only the center or arch bottom edge 14 of the upper, excluding the heel and toe edges 14a and 18, respectively, is stitched along the center edge or arch 25 of the insole 20 and that the toe edge 18 and heel edges 14a are not joined to the insole by stitching but are later drawn over the toe and heel areas 23, 24, respectively, of the insole and sealed by adhesive.

As the first step in the preferred method of forming the shoe of this invention, the shoe upper is stitched along the back heel edges 16 so as to form a heel seam 32, as shown in FIG. 3. A pair of drawstrings 34 and 36 are attached to the heel edge 14a and toe edge 18, respectively, by suitable over-looping stitches 35. The stitches 35 are strong enough to hold the threads along the edges of the upper under strong tension and yet allow the strings to slide within the loops so as to draw and tighten the upper into smaller edges at the toe and heel.

As a subsequent step of this method, the insole 20 is attached to the upper 10 along the middle or arch edge 25 of the insole and center edge 14 of the upper. This is accomplished by bringing the edges of the insole and upper together at a slight overlap or even in abutting

relationship and then sewing a seam 27 along both sides of the shoe.

After the insole and the upper have been securely stitched along the arch portion as shown in FIG. 4, the shoe can be turned right side up and a top edge lining material 40 is added and stitched as at 43 to the upper around the upper edge 12. A heel liner 42 can also be added at this time so that the upper is substantially finished before it is placed on the last. However, this step can be omitted entirely or delayed until the final joining of the insole and upper.

As the next step, the upper and attached insole are drawn over a last 45 of suitable size having the general outlines of a human foot as shown in FIG. 6. The bottom surface 46 of the last is broader than the width of the insole 20 so that the peripheral portions 17 of the upper are drawn over the bottom surface 46 of the last to partly form the flat bottom of the shoe. This causes the seam 27 to be placed inwardly from the edge of the bottom of the shoe. The insole, although narrower than the last, is approximately the same length.

As shown in FIG. 7, the toe draw string 36 is tensioned so that the toe edge 18 of the upper is drawn over the edge of the last and on to the insole toe area 22 forming gathers 57 in the upper material. The heel string 34, shown in broken lines, has already been drawn and knots 34a tied in both ends of the string so that the heel edge is drawn and held similar to the toe edge, over the edge of the last and on to the insole heel area 24. After both strings have been drawn and knotted, heat and pressure are applied to the toe and heel periphery portions 50 and 52, respectively, so as to activate and seal the thermoplastic adhesive thereby joining the toe and heel edges of the upper to the edges of the insole. It is noted that in pulling the heel and toe edges of the upper around the front and back of the last, a heel and toe pocket 54 and 56, respectively, have been formed and correctly shaped in a very short time.

As shown in FIG. 8, both drawstrings 34, 36 have been drawn and pairs of knots 34a, 36a, respectively, tied so as to anchor the heel and the toe edges. Heat and pressure applied either through the last or around it on the outside seal the adhesive and remove the gathers 57 shown in FIG. 7 to form a smooth, flat base for the application of the outsole. Preparation for attaching the outsole consist of applying suitable filler and/or adhesive to the peripheral edges of the upper or to the entire insole and then attaching the outsole by pressure or by other means well known in the art. A heel (not shown) can be inserted and otherwise attached prior to completion of the outer sole.

As the insole of the shoe of this invention is particularly flexible, it can fit and accommodate a variety of lasts having different heel heights, for example, heel heights of two inches, one and a half inches or one inch.

It should be understood from this description that this invention combines certain features of slip-lasting and string-lasting which are, first, partly seaming the insole and the upper along the arch portion prior to drawing the shoe over a last and then shaping the heel and toe by pulling the upper around the last before finally joining upper to the insole at the toe and heel. In the string-lasting method shown in the Miller patent, supra, the

upper and insole are independent and the upper is entirely shaped before the two are joined. In the slip-lasting method shown in the patent to Garofalo, the insole and uppers are completely joined by a seam prior to lasting, with the toe pocket formed by drawstrings without the use of a last. It is recognized that this method has the serious disadvantage of causing consecutive shoes to vary slightly in size in spite of efforts made to maintain the same size shoe production. The insole is seamed to the upper along the arch prior to lasting thereby relatively positioning the two members correctly and strongly joining them before lasting in an area which does not need to be shaped. Subsequently, the heel and toe pockets are formed around the last providing a smooth and well-shaped toe and heel. The present method forms a shoe of a definite size having a better shaped toe and heel pocket with greater speed than the Garofalo method, and the present method provides a shoe which is stronger than that of the Miller method with more precise joining of the upper insole.

Although this invention has been described with reference to specific forms and embodiments thereof, it will be apparent to those skilled in the art that various changes other than those referred to above may be made in the form of the apparatus, that equivalent elements may be substituted for those illustrated in the drawings, that parts may be reversed, and that certain features of the invention may be used to advantage independently of the use of other features, or within the spirit and scope of the invention as defined in the appended claim.

Having described my invention, I claim:

A method of making shoes comprising the steps of providing an upper and an insole cut from flat fabric, sewing a heel seam to join the heel and edges of the upper, securing a pair of drawstrings by a series of stitches to the toe and heel portions of the upper around the bottom edge thereof, applying adhesive to the toe and heel areas of the insole, partially joining the insole to the upper by sewing a seam along the edges of the insole and upper along the arch portion, drawing the attached upper and insole on a last so that the insole and peripheral portions of the upper along the arch portion are located along the bottom of the last, pulling the drawstrings to gather the edge of the toe and heel portions of the upper over the toe and heel portions of the insole, knotting the drawstrings while in the tensioned condition, and applying heat and pressure to the toe and heel portions of the upper drawn over the insole on the last thereby activating the adhesive and removing gathers to form a flat surface.

References Cited by the Examiner

UNITED STATES PATENTS

436,550	9/1890	Wiley	12—145
1,757,537	5/1930	Miller	12—145 X
2,151,020	3/1939	Fredericksen	12—145 X

FOREIGN PATENTS

965,146	9/1950	France.
593,267	10/1947	Great Britain.
731,828	6/1955	Great Britain.

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