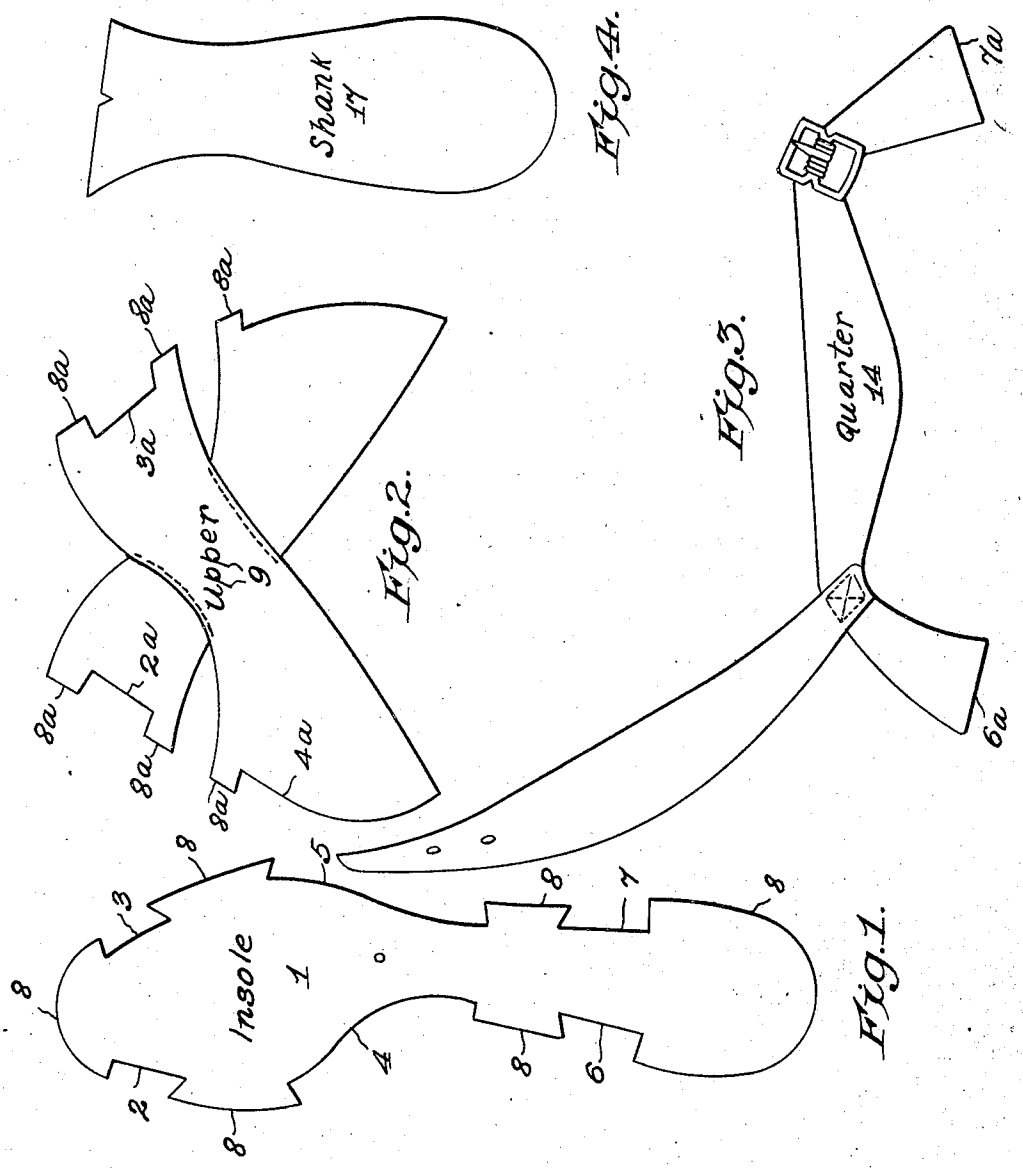
March 4, 1947. G. DE LUCA 2,416,868

SHOE AND METHOD OF MAKING THE SAME

Filed Oct. 26, 1945 4 Sheets-Sheet 1



INVENTOR.
GAETANO DE LUCA
BY
Cornelius Zabriskie
ATTORNEY

March 4, 1947. G. DE LUCA 2,416,868

SHOE AND METHOD OF MAKING THE SAME

Filed Oct. 26, 1945 4 Sheets-Sheet 2

Fig. 5.

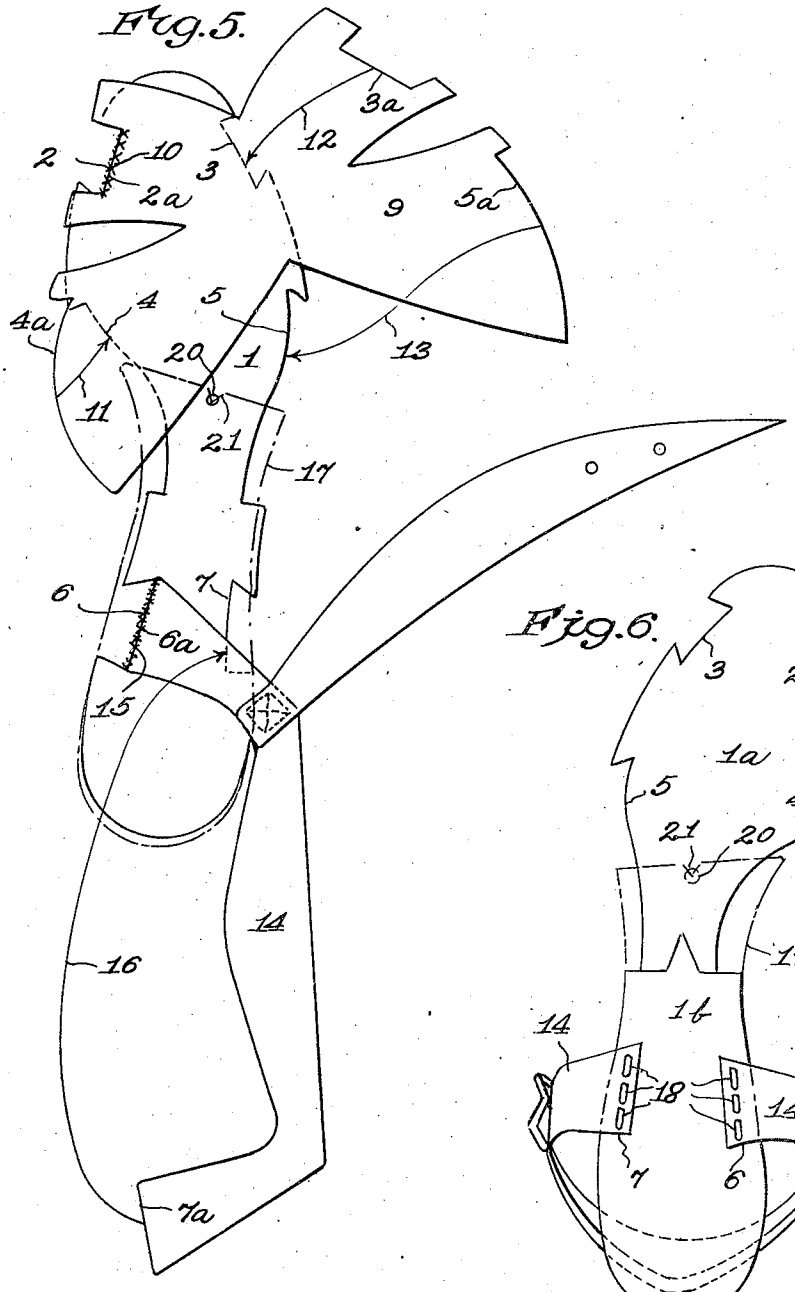


Fig. 6.

INVENTOR.
GAETAO DE LUCA
BY Cornelius Zabriskie
ATTORNEY

March 4, 1947. G. DE LUCA 2,416,868

SHOE AND METHOD OF MAKING THE SAME

Filed Oct. 26, 1945 4 Sheets-Sheet 3

Fig. 7.

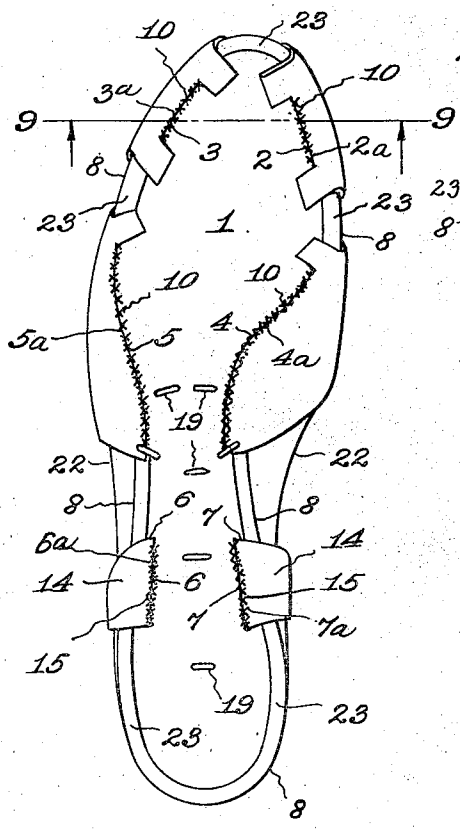


Fig. 8.

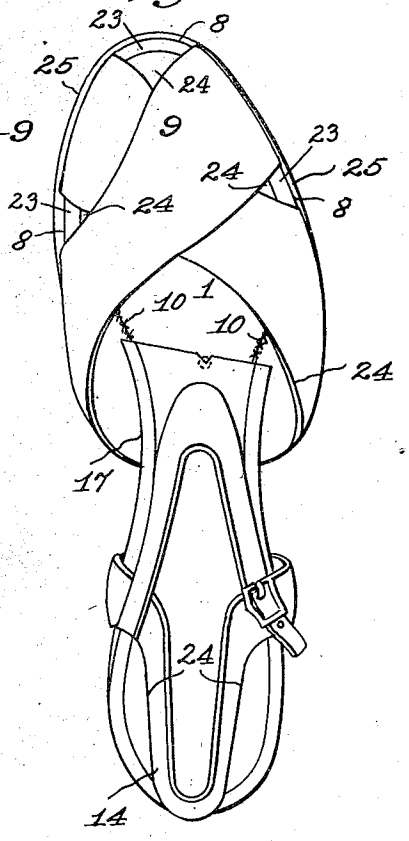
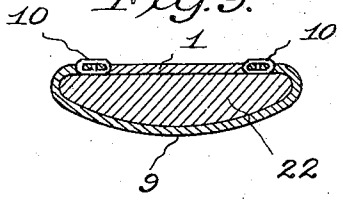


Fig. 9.



INVENTOR.
GAETANO DE LUCA
BY
Cornelius Fabrisius
ATTORNEY

March 4, 1947. G. DE LUCA 2,416,868

SHOE AND METHOD OF MAKING THE SAME

Filed Oct. 26, 1945 4 Sheets-Sheet 4

Fig. 13.

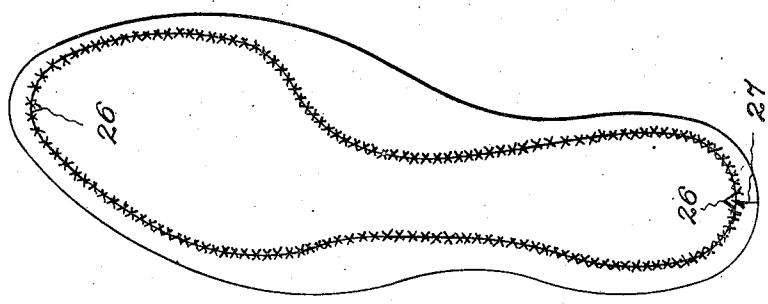


Fig. 12

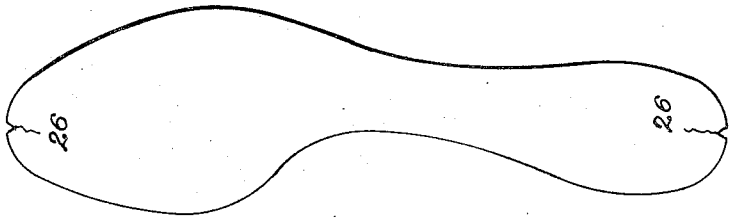


Fig. 11.

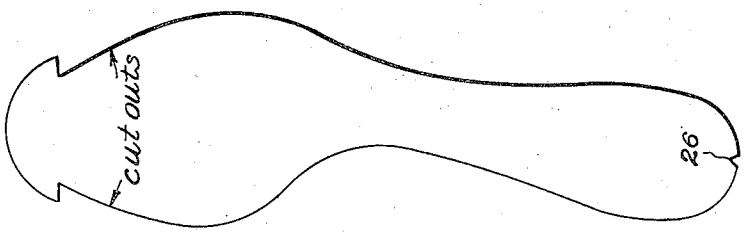
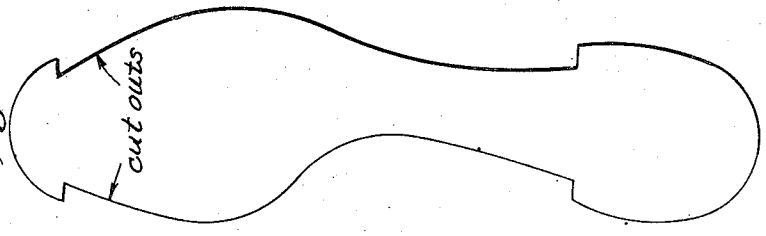


Fig. 10.



INVENTOR.
GAETANO DE LUCA
BY
Cornelius Zabriskie
ATTORNEY

Patented Mar. 4, 1947

2,416,868

UNITED STATES PATENT OFFICE

2,416,868

SHOE AND METHOD OF MAKING THE SAME

Gaetano De Luca, Brooklyn, N. Y.

Application October 26, 1945, Serial No. 624,689

6 Claims. (Cl. 36—11.5)

1

This invention relates to the manufacture of shoes and more particularly shoes of the pasted type, i. e., shoes wherein the upper is attached to the insole and outsole by cement or other adhesive.

Heretofore in the making of shoes of this general character, the following procedure is conventionally employed: The shoemaker first secures the insole to an inverted last by at least four or five tacks, so as to anchor the insole in position thereon. Thereafter the upper is pulled tight over the last and the edges of the upper drawn tight over the insole by means of pliers so as to stretch the upper tightly about the last and into conformity therewith. As it is thus stretched into place, it is tacked along its margin to the last through the insole. At least twenty to twenty-five tacks are commonly used for this purpose. The thus lasted shoe then goes to a "Niggerhead" or side last machine which further stretches the upper over the insole while cement is being applied between the margins of the upper and the insole and immediately thereafter the entire margin of the upper is tacked to the insole by tacks which are one-quarter inch or less distance apart, so that in a shoe of this character it is common to thus tack the margin of the insole to the last by upwardly of one hundred tacks. The purpose of these tacks is to hold the upper firmly in place while it is being glued to the insole. After the glue has set, the tacks are then removed and become waste. After the tacks have been removed, the free edges of the upper are manually pounded to flatten them as much as possible and they are thereafter hand trimmed to eliminate thick edges. The upper is then put through a roughing machine to rough that portion of the upper which overlies the insole and make it receptive to the gluing or cementing operation. The metal shank is then put in and, over the shank and the ball of the foot, is generally applied a filler of cork, sawdust or the like. Thereafter paste is applied to the outer sole and the outer sole is pasted to the inner sole and upper. When the paste has set, the shoe is removed from the last in completed condition.

The object of the present invention is to make a shoe of the same general character while eliminating a great number of these steps and yet provide a soft, flexible, comfortable shoe, comparable to a hand turned shoe at a fraction of the cost and in much shorter production time.

Under prior practice the only operation carried out in the fitting room is the preparation of the upper so that it may be sent to the shoemaker

2

to last it over the insole. According to the present invention the upper is attached to the insole in the fitting room and these parts already assembled go to the shoemaker in a condition to be collectively applied to a last.

In practising the present invention I preferably proceed as follows: As a result of careful research, experimentation and tests, I have worked out patterns appropriate to uppers and insoles of various shoe sizes and designs. From these patterns I am able to lay out and die-cut insoles and corresponding uppers in various styles in a "clicker machine." These patterns are made so accurately that I am able to bring corresponding edges of an upper and insole into registration in marginal face abutting relation and to sew them together, preferably with a zigzag or overlock stitch in any ordinary machine, so that, when thus sewed together, they may thereupon be drawn over a last of corresponding size and will be found to fit properly. All that remains for the shoemaker to thereafter do is to apply the usual shank and filler and thereafter cement the outer sole and heel in the usual, conventional manner, whereupon the shoe may be removed from the last in completed condition.

Consequently, this invention effects very considerable economies both in labor and materials, among which may be mentioned: The conventional operations of separately tacking the insole on the last, followed by the assembly of the upper and insole while on the last, are entirely eliminated; the use of the tacking machine is wholly unnecessary; no pasting of the upper to the insole is required, and the use of both the "Niggerhead" or side last and the tack withdrawing machines are completely dispensed with. There is also as much as three-quarters inch to one inch waste saved along the free edges of the upper, for this extra stock heretofore required for stretching of the upper over the insole during lasting, is not required in the carrying out of the present method. Shoe factories use from one-half ton to over a ton of tacks each day, under present practice, to tack the upper to the insole when cementing the former to the latter. After a single use these tacks are discarded and become waste. This waste is eliminated for the present invention does not require this tacking operation.

Notwithstanding these savings, the present invention accomplishes the objects hereinbefore enumerated, and others, and provides a better shoe of the pasted type, well adapted for low cost quantity production.

Features of the invention, other than those

adverted to, will be apparent from the hereinafter detailed description and claims, when read in conjunction with the accompanying drawings.

The accompanying drawings illustrate different practical embodiments of the invention, but the constructions therein shown are to be understood as illustrative, only, and not as defining the limits of the invention.

Figures 1–4, inclusive, show the insole, upper, quarter and shank, respectively, of a sandalized type of open toe and open heel shoe with side openings, these parts being illustrated after they have been cut to shape and before assembly.

Figure 5 is a plan view showing the upper and the quarter partially attached to the insole before lasting and with the shank illustrated in dot and dash lines to show the position which it will subsequently occupy.

Figure 6 is a view similar to Figure 5, but shows the insole made in two pieces to be fitted together as shown to form the complete insole and with the quarter stapled to the insole instead of sewn thereto, as in Figure 5.

Figure 7 shows the upper quarter and insole united by stitching and positioned on a last, the parts being viewed with the last in its inverted working position, i. e., bottom up.

Figure 8 is a top plan view of the finished shoe removed from the last and with the outer sole applied.

Figure 9 is a section on the line 9—9 of Figure 7.

Figures 10, 11 and 12 show insoles of different contour appropriate to shoes of different design and made in accordance with the present invention.

Figure 13 is the bottom view of a fully closed shoe as it goes from the fitting room to the shoemaker to apply the same to the last.

In practising the present invention, the insole, upper, shank and quarter are first blanked out of leather or other material, as shown in Figures 1–4, the parts of which are appropriate for the formation of a shoe with an open quarter, open toe and side openings in the forward portion and at the shank. The upper and the quarter in such a shoe may be made from single pieces of leather or separate pieces sewed together, as shown in Figures 2 and 3 to minimize waste in cutting. In any event, the dies by which these parts are blanked out are made according to patterns which are accurate as to size and shape, so that, when these parts are assembled as presently described, they will properly fit one another and will fit a last appropriate to this shoe size and style.

It will be noted that the insole 1 of Figure 1 is provided along its edges with cut-outs 2, 3, 4, 5, 6 and 7, while intermediate these cut-outs the insole is extended to the outlying edges 8, which correspond, in reality, to the outer overall contour of a conventional insole. The particular placement of the cut-outs 2–7, inclusive, is governed by the design of the upper and quarter, for at these cut-outs the upper is sewed to the insole by lines of stitching which underlie the foot of the wearer when the shoe is worn. The extensions between these cut-outs permit the insole to project or extend substantially to the outer edge of the outer sole at the openings in the upper and thus give a finished appearance in the finished shoe.

The upper 9, shown in Figure 2, has cut-outs 2*a*, 3*a*, 4*a* and 5*a* which correspond to the cut-outs 2, 3, 4 and 5, respectively, of the insole and these cut-outs in the upper are made with terminal projections 8*a* for the purpose of fitting

the upper to the insole and constitute means to designate the opposite ends of the cut-outs in the upper and thereby insure of correct placement with respect to the insole during the assembly of these parts. With the particular type of open quarter shown in Figure 3, no cut-outs are necessary for the edges 6*a* and 7*a* are made to conform with the cut-outs 6 and 7 of the insole and can therefore be readily registered therewith.

In fabricating a shoe from the parts shown in Figures 1–4, the insole 1 is laid flat with the foot-facing surface up, and the upper 9 is laid flat on the top surface of the insole with the cut-out 2*a* of the upper registering with the cut-out 2 of the insole, as shown in Figure 5. At this stage the margin of the upper adjacent the cut-out 2*a* is in face contacting relation with the insole and the edge 2*a* coincides with the edge 2 of the latter. While held in this position, the upper and insole are stitched together by stitches 10 which may conveniently be accomplished by a conventional zigzag or any other appropriate stitching machine.

After the cut-outs 2 and 2*a* have been united along their edges, as indicated by the stitches 10, the upper, which is of flexible material, can then be readily manipulated to bring successive portions of the cut-out 4*a* into corresponding relation to the cut-out 4 of the insole, as indicated by the arrow 11 in Figure 5. In practice, one end of the cut-out 4*a* is positioned at the end of cut-out 4 nearest the cut-out 2, and, while thus held in cooperative relation to a stitching machine, the edges 4*a* and 4 are sewed together in marginal contacting and edge coinciding relation as the successive portions of said edge of the upper are brought into this relation with progressive portions of the cut-out 4, until the entire edge of the cut-out 4*a* is sewed along the edge of the cut-out 4. This has the effect of shaping the upper.

After the left hand side of the upper has been attached to the left hand edge of the insole, as viewed in Figure 5, the same operations are carried out to attach the right hand edge of the upper to the right hand edge of the insole. This is accomplished by progressively bringing the cut-outs 3*a* and 5*a* into the same marginal face contacting and edge coinciding relation, as hereinbefore described, and as indicated by the arrows 12 and 13, and then stitching the upper to the insole by lines of zigzag or overlock stitching. When these operations are completed the entire upper has been attached to the insole and the upper generally shaped.

The quarter 14 is next brought into the position indicated in Figure 5 wherein its edge 6*a* will register with the cut-out 6 and when this has been accomplished, the parts are united by stitching 15, as shown in Figure 5. This having been accomplished, the end 7*a* of the quarter is brought into corresponding relation with the cut-out 7 of the insole, as indicated by the arrow 16 and stitched together in the same manner. Instead of making the insole 1 in one piece, it may sometimes expedite operations to divide the insole at the shank into two pieces, as indicated at 1*a* and 1*b* in Figure 6 and thereafter interfit these parts after the upper has been attached to the fore part 1*a* and the quarter attached to the rear part 1*b*. Figure 6 shows such an arrangement and it further shows that, instead of using lines of stitching 15 to attach the quarter to the insole as in Figure 5, the quarter may be attached to the insole by staples 18. In this case, the staples 18 may be

passed through the shank piece 17 after the ends of the quarter have been positioned in the cut-outs 6 and 7 in face contacting relation to the under side of the shank.

In any event the upper and quarter are attached to the insole, and the shank 17 secured to the insole in accurate position in the fitting room before the shoe is lasted. Accurate positioning of the shank with respect to the insole may be accomplished by providing the insole with an indicating mark or perforation 20 and by forming the forward edge of the shank with a notch 21 which, when registered with the indicating mark 20, will insure its accuracy.

After the parts have been assembled and sewed and/or stapled together in the manner specified, they are passed to the shoemaker who then and for the first time applies them in such assembled relation and as a unit to a last 22 of appropriate size and style. Figure 7 shows the assembled parts upon the last as viewed from the bottom of the last. In this figure, the insole 1 is shown as provided with a marginal binding 23. The binding 23 extends about those portions of the margin of the insole which show through the openings of the upper. Such a binding is provided upon the insole before the parts are assembled, but has been omitted in the previous figures in the interest of clearness. This binding may be of any material such as leather or fabric of appropriate color and grain according to the style and type of shoe.

When the unit is thus positioned on a corresponding last, it will be found that, if the blanking dies were properly made and the attachment of the upper and quarter to the insole were properly executed, the shoe will accurately fit the last without undue stretching or looseness. It may be here noted that no high degree of skill is required for the sewing of the upper and quarter to the insole for all the workman has to do is to feed the edges, while held in proper relation, through a sewing machine. There is practically nothing left to skilled judgment in this operation.

When the shoe is on the last, the lines of stitching 10 and 15 will underlie the last, while the projections between the cut-outs of the insole will extend through the opening 24 in the fore part of the upper to give a finished edge at these cut-outs, and also along the shank portion of the shoe and around the heel portion thereof, as will be clearly apparent from Figure 7. As the upper is lasted over the last, the stitching 10, if of overlock or zigzag character, will permit the edges of the upper to come into edge abutting relation with the edges of the insole, as clearly shown in Figure 9, so as to provide a flat joint between them, without ridges or appreciable extra thickness at these locations.

The shoe upper and quarter unit having been applied to the last, as shown in Figure 7, the shoemaker may thereupon and without further operations apply the usual steel shank, and an appropriate cork or sawdust filling and thereupon cement the outer sole and heel to the shoe in the conventional manner, to complete the shoe. The shoe may then be removed from the last and, when inverted into this wearing position, will appear as shown in Figure 8, wherein the outer sole is indicated by the reference character 25.

The foregoing description sets forth the manner of making a sandalized type of shoe with open toe and open quarter. The invention is not limited to the manufacture of this particular type of shoe as other types of shoe can be manufactured

with equal dexterity in accordance with this invention by the use of appropriate blanking dies, for the upper and insole. Thus Figure 10 shows how an insole should be shaped to provide an open toe, open back pump, while Figure 11 shows how the insole should be shaped to provide an open front and closed back shoe. In Figure 10, the cut-outs extend from the open toe portion to the open heel portion, while in Figure 11, the cut-out extends from the open toe portion entirely around the shoe and back to this portion with a notch 26 at the center of the back to locate the upright seam in the upper at the center of the heel of the shoe. Figure 12 shows how an insole should be blanked out for a completely closed shoe, i. e., one which has neither an open front or an open back, nor side openings. Such an insole requires no extensions to give finished appearance at openings, for there are none, but notches 26 at the front and rear of the insole and in the medial line thereof, facilitate the proper positioning of the upper with respect to the insole when sewing them together. The bottom of a closed shoe is shown in Figure 13 with the upper united to the insole around the entire margin thereof and with a center seam 27 at the back of the upper. The assembly shown in Figure 13 is ready to receive a shank 17 and may thereupon be placed upon a last, a metal shank and filler material applied, and the outer sole pasted on in the usual manner.

Thus it will appear that the present invention provides an unusually simple, economical and efficient manner of making shoes. The foregoing detailed description sets forth the preferred procedure in connection with particular styles or types of shoe, but the invention is to be understood as fully commensurate with the appended claims.

Having thus fully described the invention, what I claim as new and desire to secure by Letters Patent is:

1. The herein described method of making shoes which comprises: providing an insole appropriate to a particular style and size of shoe, providing an upper appropriate to the same style and size of shoe, thereafter sewing to the margins of the insole, while off the last, marginal portions of the upper with the inner surface of the marginal portions of the upper in face contacting relation to the inner surface of the insole and with the corresponding outer edges of the upper and insole in substantial registration, by over-edge stitching which passes through both the upper and insole and embraces said outer edges, thereafter applying the assembled upper and insole to a last and shifting the upper on said stitches to bring the thus sewed edges of the upper and insole into substantially edge abutting relation to form a flat joint between them, and applying an outer-sole while on the last.

2. The herein described method of making shoes which comprises: providing an insole appropriate to a particular style and size of shoe, providing an upper appropriate to the same style and size of shoe, thereafter sewing to the margins of the insole, while off the last, the entire margin of the upper with the inner surface of the marginal portions of the upper in face contacting relation to the inner surface of the insole and with the corresponding outer edges of the upper and insole in substantial registration, by over-edge stitching which passes through both the upper and insole and embraces said outer edges, thereafter applying the assembled upper and insole to a last and shifting the upper on

said stitches to bring the thus sewed edges of the upper and insole into substantially edge abutting relation to form a flat joint between them, and applying an outer-sole while on the last.

3. The herein described method of making shoes which includes the following steps: providing an insole appropriate to a particular style and size of shoe, providing an upper having a fore part appropriate to the same style and size of shoe, sewing to the insole while off the last marginal portions of said fore part, while the inner surface of said marginal portions of the fore part is in face contacting relation to the inner surface of such insole and with the corresponding outer edges of the upper and insole in substantial registration, by over-edge stitching which passes through both the upper and insole and embraces their outer edges, all of which operations are carried out before the shoe is placed on a last, thereafter placing the thus assembled insole and fore part upon a last and shifting said forepart on said stitches to bring the thus sewed edges of the upper and insole into substantially edge abutting relation to form a flat joint between them, and applying an out-sole while on the last.

4. The herein described method of making shoes, which comprises: providing an insole with cut-out portions where an upper is to be attached thereto and with those marginal portions of the insole between the cut-outs projecting beyond the base of the cut-outs to substantially the contour of the out-sole to be subsequently applied thereto, providing an upper with marginal edges positioned to register with the cut-outs in the insole, bringing said marginal edges of the upper into registration with the bases of the cut-outs of the insole with said marginal portions of the upper in face-contacting relation with the insole and sewing them together in this relation, before they are placed on a last, by over-edge stitching which passes through both the upper and insole and embraces the registering edges of both of them, thereafter placing the insole and upper as a unit upon a last and shifting the upper on said stitches to bring the thus sewed edges of the upper and insole into substantially edge abutting relation to form a flat joint between them, and applying an out-sole while on the last.

5. A shoe comprising: an insole provided with spaced apart marginal cut-outs with interspaced marginal projecting portions, bindings along said marginal projecting portions, an upper having marginal portions extending into said cut-outs of the insole and sewed to the insole along the bases only of said cut-outs, said upper having projecting tabs extending to underlie the ground-facing side of the insole between said cut-outs and covering and concealing the opposite end portions of said bindings, and said upper having openings between said tabs and juxtaposed with said marginal projecting portions of the insole, and an outsole adhesively secured to the ground-facing side of the assembled upper and insole.

6. The herein described method of making shoes, which comprises: providing an insole with spaced apart marginal cut-outs and interspaced marginal projecting portions having bindings; providing an upper with marginal edge portions adapted to register with said cut-outs and projecting tabs at the opposite ends of said marginal edge portions; bringing said marginal edge portions of the upper into registration with the bases of the cut-outs of the insole with adjacent portions of the upper and insole in face contacting relation and sewing them together in this relation, while off the last, by over-edge stitching which passes through both the upper and insole and embraces the registering edges of both of them; thereafter placing the insole and upper upon a last and shifting the upper on said stitches to bring the thus sewed edges of the upper and insole into substantially edge-abutting relation to form flat joints between them; positioning the projecting tabs of the upper to overlie and conceal the opposite ends portions of the bindings; and applying an outsole.

GAETANO DE LUCA.

REFERENCES CITED

The following references are of record in the file of this patent:

UNITED STATES PATENTS

Number	Name	Date
2,167,858	Wexler	Aug. 1, 1939
2,329,282	McDermott	Sept. 14, 1943
1,976,135	Murray	Oct. 9, 1934
2,386,786	Famolare	Oct. 16, 1945
Re. 20,280	Miller et al.	Mar. 2, 1937
2,157,982	Gorman	May 9, 1939
2 092 533	Hyde	Sept. 7, 1937
2,081,887	Bain	May 25, 1937
1,784,806	Fried	Dec. 9, 1930
2,354,903	Wolff	Aug. 1, 1944

FOREIGN PATENTS

Number	Country	Date
109,113	Australian	Nov. 13, 1939