Nov. 2, 1937. C. H. DANIELS 2,097,451

SHOE

Filed Aug. 24, 1934 2 Sheets-Sheet 1

Fig. 1.

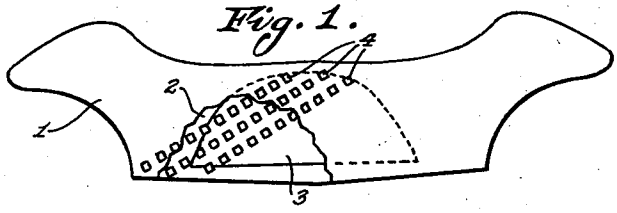


Fig. 4.

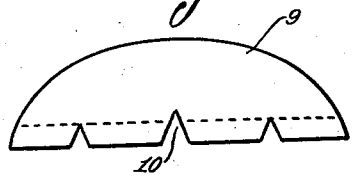


Fig. 2.

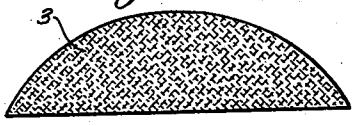


Fig. 5.

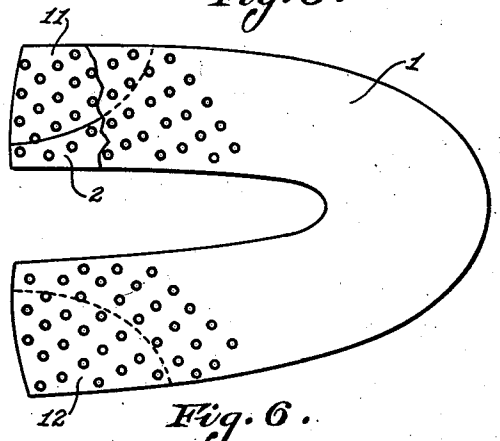


Fig. 3.

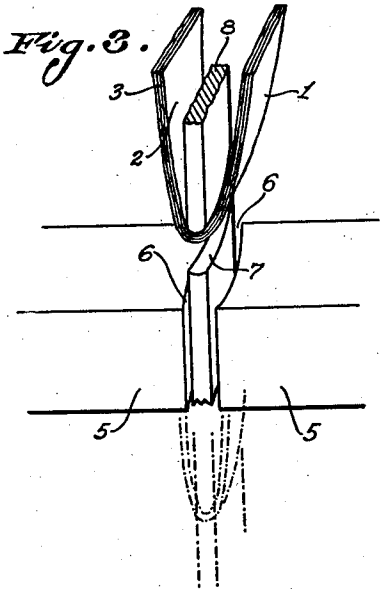


Fig. 6.

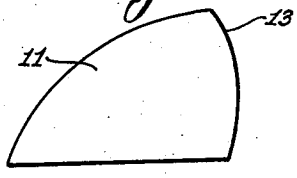


Fig. 7.

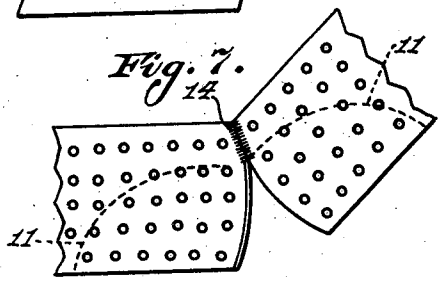


Fig. 9.

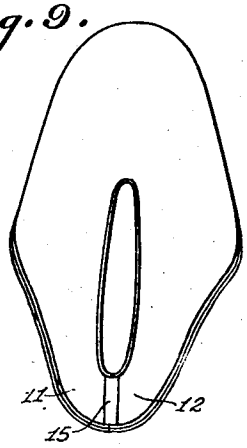
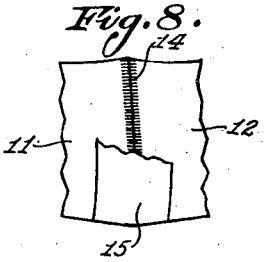


Fig. 8.



Inventor:
CLAUDE H. DANIELS,
By John N. Sutherland
His Attorney.

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SHOE

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Fig. 10.

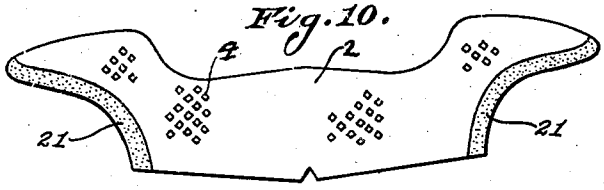


Fig. 11.

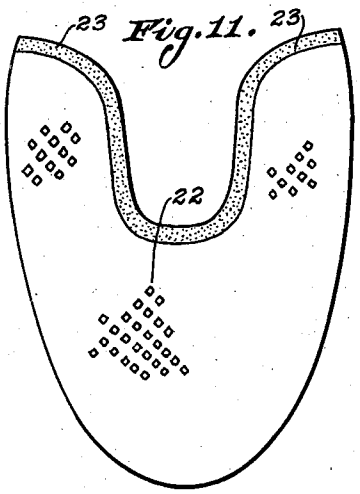


Fig. 12.

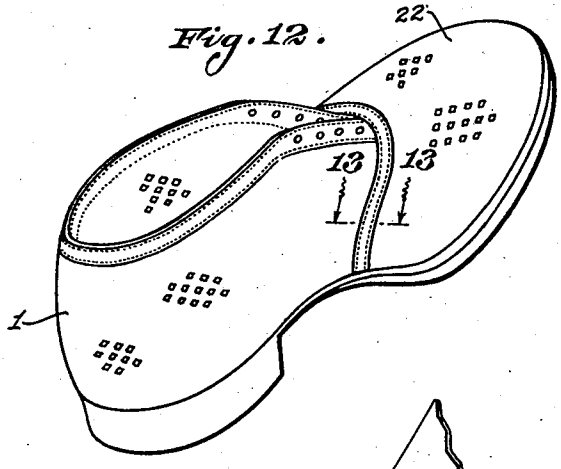


Fig. 13.

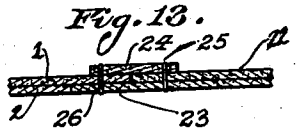


Fig. 14.

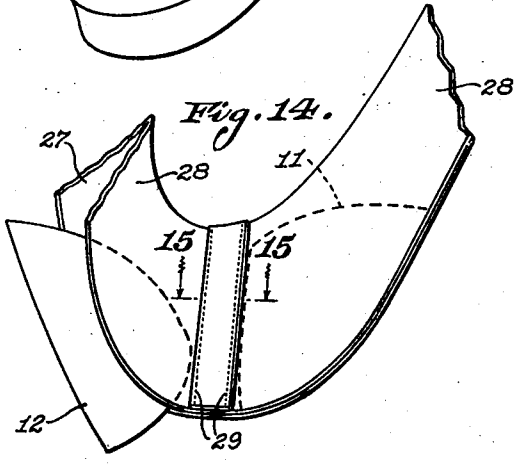


Fig. 15.

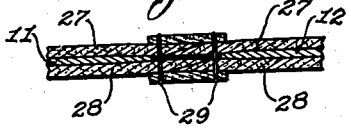


Fig. 17.

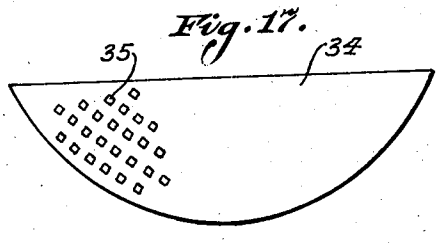
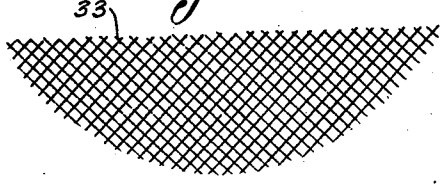


Fig. 16.



Inventor:
CLAUDE H. DANIELS,
By John W. Sutherland
His Attorney.

Patented Nov. 2, 1937

2,097,451

UNITED STATES PATENT OFFICE

2,097,451

SHOE

Claude H. Daniels, Wellesley Hills, Mass.

Application August 24, 1934, Serial No. 741,197

9 Claims. (Cl. 12—146)

This invention relates generally to shoes, and particularly to a method of applying the counter to shoes whereby the counter may be said to be built into the upper.

In accordance with the usual practice of shoe making the counter which is a stiffener inserted in the region of the heel to hold up the upper at that point is inserted between the layers of upper material at the time the shoe is lasted. In other words, the upper is completed and is furnished to the laster, and in accordance with the usual practice the laster loosely inserts the counter between the folds of upper material.

Ordinarily a counter which is generally formed of fiber board, or sole leather, is molded prior to insertion between the folds of upper material so that it conforms generally to the shape of the last and is inserted in this condition between the folds. The presence of a counter of this shape renders it difficult to perforate the various layers of upper material so as to provide a ventilated counter and, furthermore, the respective layers of upper materials are seldom conformed to the shape of the counter so as to present as neat an appearance as if the layers had been pressed together.

It is an object of the present invention, generally stated, to provide a shoe having a built-in counter.

Another object of the present invention is to provide a method of making shoes whereby a flat counter is attached to the upper sections, such as quarters in the flat and prior to lasting.

A further object of this invention is to provide a method of making shoes wherein a flat counter is secured to the quarter and thereafter conformed generally to the shape of a last.

A more specific object of this invention is to provide a process of making shoes wherein a flat counter may be secured between a quarter and quarter lining, the respective layers pressed flat and thereafter conformed generally to the shape of the heel end of the last.

Other objects will become apparent to those skilled in the art when the following description is read in connection with the accompanying drawings, wherein—

Figure 1 is a plan view of a double quarter assembly, part being broken away to expose a built-in counter.

Figure 2 is a plan view of a counter employed in the quarter section of Figure 1.

Figure 3 is a perspective view showing elemental apparatus adapted to mold the assembly shown in Figure 1 to conform it generally to the shape of the heel end of a last.

Figure 4 is a plan view of another form of counter which may be used in the upper section, shown in Figure 1, with or without the use of the molding apparatus of Figure 3.

Figure 5 is a plan view of a one-piece upper illustrating the manner of incorporating a built-in counter in separate quarter sections.

Figure 6 is a plan view of the counter employed in accordance with the present invention in separate quarter sections.

Figure 7 is a view showing a manner of connecting the separate quarter sections in accordance with the present invention.

Figure 8 is a view illustrating the condition of the parts after the separate quarter sections are connected together.

Figure 9 is a view of a completed upper constructed in accordance with one embodiment of the present invention, and embodying a built-in counter.

Figure 10 is a view of the reverse side of the quarter shown in Figure 1.

Figure 11 is a plan view of a vamp for employment with the quarters of Figure 10.

Figure 12 is a perspective view of a seamless back shoe embodying the quarters of Figures 1 and 10 and the vamp of Figure 11.

Figure 13 is a sectional view taken along line 13—13 of Figure 12.

Figure 14 is a perspective view looking at the interior back of another embodiment wherein half counters are separately inserted.

Figure 15 is a cross sectional view taken along line 15—15 of Figure 14.

Figure 16 is a plan view of a counter formed of wire mesh.

Figure 17 is a plan view of a counter formed of perforated metal mesh.

In accordance with the present invention, generally stated, the usual stiffener, or counter, which is employed in the region of the heel of a shoe is attached before the upper is in condition to be lasted. This may be conveniently accomplished by providing a flat piece of material, such as fiber board, sole leather, or even woven fabric which may be suitably secured as by adhesive to the quarter section of a shoe. This may be conveniently accomplished with the materials in a flat condition, since in this condition pressing of the respective layers together so as to cause the respective layers to conform to each other and impart some stiffness thereto is facilitated. In the event it is desired to perforate the counter, such perforation may be conveniently accomplished with the materials in this flat condition and the various layers may be simultaneously perforated.

Since the counter is ordinarily relied upon to cause the heel end of a shoe to maintain its shape and stay in place after the last is removed, it is desirable to apply some force to the built-in counter assembly so as to cause the assembly to conform generally to the shape of the heel end of the last before the shoe is lasted. This may

be accomplished in various ways as by molding the assembly, or by cutting and connecting the materials in such a manner as to cause them to conform to the curvature of the last. This is all accomplished prior to the lasting operation so that the complete upper when furnished to the laster is already provided with a counter and the parts are pressed and secured together so that the laster instead of having several folds of upper material to deal with at the heel end of the shoe may, in accordance with the present invention, have only one fold which indeed may comprise a plurality of layers adhered together.

A facile and convenient method of shaping the built-in counter is to subject the completed assembly including the built-in counter to the action of steam or a highly humid atmosphere, as mulling, to soften the counter so that when permitted to dry upon a last, the counter will conform itself to the shape of the last.

Referring now to the drawings there is illustrated in Figure 1 a section of upper material constituting both quarters of the shoe together in one piece so as to form a seamless back shoe in a manner familiar to those skilled in the art. The assembly illustrated in Figure 1 may comprise a quarter 1, a lining 2, a counter 3 and a doubler, if desired. The respective layers may be assembled together in the condition shown with the counter centrally situated so as to be properly positioned when the upper is lasted. Each of these parts may be given a coating of adhesive prior to assembly, a suitable adhesive being vulcanized latex, or nitrocellulose cement. After the parts are assembled together, they may be subjected to pressure so as to flatten the same, and securely adhere them together. If desired, at this time a series of perforations, such as 4, may be conveniently formed passing simultaneously through the three layers so as to produce a shoe which is ventilated at the back.

It will be understood that the lining may be in the form of a counter pocket, or may be dispensed with entirely. In the latter case the counter will be fastened to the outside section directly as by adhesive or stitching.

In assembling the counter with the other parts, the counter may be located so that the upper edge thereof is slightly, say ¼" below the edge of the quarter. When in this position the counter will not interfere with subsequent application of finish strips or binding. The counter may also be located so that the lower edge thereof is above the lower edge of the quarter, as shown in Figure 1. In this manner, although the counter extends far enough to be lasted over, there is no excess material and a compact heel seat results.

As remarked above, the counter as employed in the present invention may be made of the usual materials, such as fiber board or sole leather or it may be made of fabric which has been suitably treated to stiffen it. For instance, a double nap fabric of good body but depending in weight upon the amount of stiffness desired may be stiffened as by impregnation with a suitable stiffener such as a starch solution, glue, casein or the like, care being taken to select a stiffener which is compatible with and will permit latex to adhere to the impregnated fabric. The fabric may thus be stiffened to any extent so long as it does not crack when folded flat. When the interstices of the fabric have absorbed sufficient of the stiffener to give the desired stiffness when dry, it is permitted to dry and thereafter a surfacing agent, such as latex, is applied. The latex may be applied by dipping, spraying or brushing and provides a surface to which adhesive will stick. Moreover, the latex and stiffener may be mixed together and concurrently applied. Various textile fabrics may be used, for instance, duck of suitable weight and mesh fabric, and treated similarly. Such treated fabrics may also be used as a toe stiffener.

The counter may, furthermore, be formed of metallic mesh, either in the form of wire mesh as shown at 33 in Figure 16 or in the form of thin sheet metal 34 such as aluminum, which may be perforated with a series of perforations 35 as shown in Figure 17. Such metal stiffeners as 34 may be formed by pre-perforating sheets of metal and then dieing out the stiffener blanks, whether for toe stiffeners or counters, from the perforated sheet, or the blanks may be laid in as an imperforate stiffener and perforated concurrently with the upper sections as herein described. The wire mesh may also be laid in and perforated concurrently with the upper sections, or may be inserted separately, the large proportion of openings permitting good ventilation even without undue precaution in alining the openings with openings in the upper sections.

The quarter section 1 and its lining 2 may then be connected with a vamp, and the upper finished. In accordance with one embodiment of this invention, the connection of the vamp to the quarter may be conveniently accomplished by permitting one layer (outside or lining) to extend beyond the terminus of the other at the part which is to be joined. This is illustrated in Figures 10 and 11, where the outside section 1 of the quarter extends beyond the terminus of lining 2 as shown at 21; while in the case of vamp 22, which is to be connected, the outside section may terminate short of its lining as shown at 23, or vice versa, so as to provide overlapping parts and a shoulder for positioning the parts relatively. A practical and economical method is to have the extension only on the vamp lining, as shown at 23, and make the quarter lining and quarter coextensive. The edge of the vamp 22 adjacent extension 23 thus provides a shoulder against which the quarter may be located while the extension overlaps the edge of the quarter to provide a secure joint.

The quarter assembly may be connected to vamp assembly by adhesive with or without stitching, a facile method being to locate and adhere the parts together by cement on the extension 23, and thereafter stitch a finish strip 24 across the joint, one line of stitching 26 taking through the quarter section and the other line of stitching 25 taking through the vamp section.

This provides a closed upper ready to have its built-in counter conformed as by softening or molding or otherwise, although it may be understood that the quarter with its counter may be conformed before the upper is closed. If the quarter is conformed by softening by steam or mulling before lasting, the counter will dry out on the last and thus "set up" conforming to the shape of the last.

The assembly may, however, be conformed as by the application of heat and pressure to cause the same to conform generally to the curvature of the last. In order to accomplish this, suitable apparatus, of which an elemental form is illustrated in Figure 3, may be employed. The apparatus illustrated in Figure 3 may comprise a pair

of stationary jaws 5, the operative faces 6 of which conform generally to the contour of the heel end of a last. The jaws 5 may be spaced apart a distance sufficient to permit cooperating jaws 7 and 8 to pass therebetween with an upper held in the manner shown generally in the drawings. The jaws 7 and 8 have their cooperating faces shaped in general conformity with the back of the last, one, in the embodiment illustrated, the upper one, being convex and the other being concave. The elements 5, 7 and 8 may be heated by any suitable means, such for instance as electric heating coils whereby a molding and conforming pressure may be applied.

As clearly illustrated in Figure 3, the upper assembly shown in Figure 1 may be gripped between the cooperating faces of jaws 7 and 8, the jaws operating upon the central portion of the assembly which is to form the very back of the shoe. As remarked above, the jaws 7 and 8 are so curved as to mold the assembly so as to curve it vertically in general conformity to the rear of the last. After this pressure has been applied, the assembly may be moved downwardly between jaws 5, and, if desired, the jaws 5 may be caused to exert positive lateral pressure against the moving assembly. After the jaws 7 and 8 have moved downwardly so as to clear the jaws 5 and to the position illustrated in dotted lines, the pressure on the upper assembly may be released and the latter removed.

It will be understood that many other forms of apparatus are adaptable to be used to mold the assembly as just described. For instance, the heel end of a last may be employed as one member of the molding device, and a suitable arrangement provided for applying a pressure normal to the surface of the last, and against the upper assembly. The usual counter molding machine familiar to those skilled in the art may be employed for this purpose, or, if desired as another alternative, suitable means may be provided for operating in conjunction with the usual lasting machine to apply a pressing pressure normal to the last and against the upper assembly thereon so as to cause it to conform to the shape of the last.

After the quarter sections have been thus molded so as to assume the general shape of the heel end of the last, the upper fitting may proceed. For instance, the attachment of the vamp if that has not already been done, may be accomplished and thereafter the completed upper may be supplied to the lasting room where it is assembled with a sole and the lasting operation carried out in the usual manner. In order to facilitate lasting and conforming the built-in counter to the last, the upper may be "mulled" for a time sufficient to render the materials pliable.

In order to provide a built-in counter without the necessity of the molding operation above described, a counter, such as that illustrated in Figure 4, may be provided. In Figure 4 the counter 8 is provided with a deep incision 10 which, as shown, extends from the edge thereof which would be overturned inwardly toward the center of the counter. The incision 10 may be made deep enough that when the counter is curved and turned over the bottom of the last it will cause the back of the shoe to be curved vertically in more or less conformity with the back of the last. It will be understood, however, that the incision 10 need not be made precisely as in the embodiment illustrated, Figure 4, but that it may be made from the top of the counter, or that there may be a plurality of such incisions made to the side of the center, but of sufficient depth to extend upwardly beyond the part (indicated by the dotted line) that will be overturned in lasting so as to produce a vertically curved counter.

In carrying out the invention with separate quarters which is the more common practice, the ordinary counter may be cut in two so as to provide half counters 11, as illustrated in Figure 5. One such half counter 11 may be applied to the respective quarters of a shoe, as illustrated in Figure 5 at 11 and 12. In the embodiment illustrated in Figure 5, a one-piece upper is shown for the purpose of illustration wherein both quarters and the vamp are cut from a single piece of leather. It will be understood, however, that the vamp and quarters may be formed separately, if desired, and that the invention as shown and described in connection with a one-piece upper is only for the purpose of illustration.

As shown in Figure 6 the rear edge 13 of the counter 11 is curved corresponding to the general curvature of the usual quarter pattern which is such that when two corresponding sections are fastened together the assembly will assume a cupped or vertically curved shape.

One such counter as 11 may be applied to each quarter of a shoe so that when the quarters are attached together the counters will likewise be fastened together.

The counter 11 which, it will be understood, may conveniently be in a flat condition and may be formed of any suitable material, as stated above, may be secured to one quarter of the shoe and a companion counter 12 may be secured to the opposite quarter. It will be understood that the counters may be interposed between a quarter and quarter lining, or may be used without a lining, if desired, or with what is known as a counter-pocket. Moreover, the counter or stiffener may be applied on the exterior of the quarter in the form of a foxing, or may be covered by a foxing. In accordance with the present invention, however, the counter or stiffener, regardless of the manner in which it is assembled with the other layers, is secured thereto and preferably pressed flat before the upper (in the case of separate quarters) is closed. The upper may then be closed in accordance with the usual practice of closing uppers without the built-in counter, as for instance, by stitching which in accordance with one practice is caused to zig-zag back and forth from one quarter to the other and thus connect the two together, it being understood that in accordance with the present invention the stitching 14 extending back and forth as shown in Figure 7 to secure the quarters together, may also be employed for connecting the respective counters together. It will be understood, of course, that other means of connection may be employed as the parts may be lapped and stitched through and through, or they may be stapled or secured together by any adhesive or in any suitable manner. After this is accomplished the line of stitching or other securing device may be covered by the usual backstay 15 which may be applied both inside and out.

It will be understood that when the two part counters in separate quarters are thus stitched together, the curvature of the rear side as is the case with the curvature of an ordinary quarter section is caused to assume generally the shape of the heel end of the last, or in other words, cupped. The upper with its built-in counter is

then in condition to be lasted, and, as shown in Figure 9, because the respective layers including the counter are unified, the laster is not troubled with a plurality of folds as is the case in the usual practice, but has only one fold to contend with. It is apparent, therefore, that a neater counter construction results. Since in accordance with the present invention, the quarter and lining are secured together, as by adhesive, and pressed flat, it is really unnecessary to provide the amount of stiffness which is provided by the ordinary counter which is made of fibre board or sole leather. Indeed, if there is a doubler present, sufficient stiffness may be imparted to the assembly without requiring the use of a counter, and even when a doubler is not present, a piece of woven fabric, such for instance as heavy drill, provides sufficient stiffness for the counter portion of the shoe when constructed in accordance with the present invention. Moreover, a suitable thermoplastic resin capable of being reduced to sheet form may be employed as the stiffener.

By the expression "built-in" counter as used herein is meant that the counter is securely connected between the outside quarter section and its lining (when a lining is employed) in the flat and so held with reference to the outside quarter section that the parts do not relatively displace during the lasting operation.

Furthermore, it is advantageous to employ the half counters even when they are not "built-in" as above described. The quarters **27** may thus be connected to their linings **28** at the back seam, for instance, by lines of stitching **29** as shown in Figure 15, so as to be more conveniently handled, while the half-counters **11** and **12** may be inserted in the usual manner, one on each side of the back seam at the time of lasting, as shown in Figure 14. In this case the respective half counters **11** and **12** will not be directly connected together at the back.

From the foregoing description it is apparent that the present invention contemplates the application of a flat counter to an upper, and that the counter is built-in and secured to the upper material during the upper-forming operation before the shoe is lasted as provided. This results in a shoe which is not only of neat appearance but is more comfortable to the foot and conforms more perfectly to the last than one in which a premolded counter is provided. Moreover, the procedure of manufacture is such as to permit ventilating openings to be simultaneously perforated through the various layers in the region of the counter while they are flat. It is to be understood, however, that the respective layers need not be secured together by adhesive, but may be secured together in any other manner, such for instance as by stitching. Moreover, the term "counter" as used herein and in the appended claims is to be understood as descriptive and not in the limitative sense, since it is intended to apply to various materials and in fact to a layer of any suitable material whether applied without or within the quarter section so long as it is secured thereto and provides some stiffness.

From the foregoing description it is apparent that many modifications of the shoe and procedure hereinbefore described will present themselves to those skilled in the art without departing from the spirit of this invention. It is to be distinctly understood, therefore, that the invention is not limited to the specific details of structure and procedure described, but that such modifications and the use of such individual features and sub-combinations of features as do not depart from the spirit of this invention are, although not specifically described herein, contemplated by and within the scope of the appended claims.

Having thus described the invention, what is claimed is:

1. In the art of making shoes the process comprising, securing a stiffening element of the counter type to the rear portion of a quarter section in the flat, perforating the assembly, and conforming the assembly to the general contour of the heel end of a last prior to the usual lasting operation.

2. In the art of making shoes the process comprising, adhesively securing half counters to opposite quarters of a shoe, and connecting the half counters together so as to shape the assembly to the general contour of the heel end of a last.

3. In the art of making shoes the process comprising, securing a stiffening element of the counter type to the rear portion of a quarter section in the flat, perforating through the two layers, and lasting the shoe.

4. In the art of making shoes the process comprising, providing quarter sections for a shoe, providing a pair of half-counters for such shoe, securing a half-counter to each quarter section in the flat, perforating through the assembly, and lasting the shoe.

5. In the art of making shoes the process comprising providing quarter sections for a shoe, providing a pair of half-counters each having an arcuate edge, securing a half-counter to each quarter section in the flat with the arcuate edge extending toward the rear of the shoe, perforating through the assembled quarters and counters, connecting the perforated quarter-counter assemblies together along the arcuate edge of said half-counters.

6. The process of making shoes as set forth in claim 3 characterized by the feature that the counter is formed in a single piece of size sufficient to extend into the region of both quarter sections of the shoe.

7. In the art of making shoes, the process comprising adhesively uniting a quarter section, quarter lining and a stiffening element of the counter type together in the flat, perforating through the assembly, and lasting the shoe.

8. In the art of making shoes the process comprising providing quarter sections, quarter lining sections and a counter, said counter being in the form of half-counter sections, adhesively uniting a quarter section, quarter lining and counter together in the flat, perforating through the assembly and thereafter completing the shoe.

9. In the art of making shoes the process comprising providing quarter sections, quarter lining sections and a counter, said counter being in the form of half-counter sections each having an arcuate rear edge, adhesively uniting said quarter sections, lining and counter to form a pair of flat laminated assemblies, each composed of a quarter section, a lining therefor and a half-counter, perforating through the assemblies, and thereafter connecting the assemblies together along said arcuate edge of said half-counters.

CLAUDE H. DANIELS.