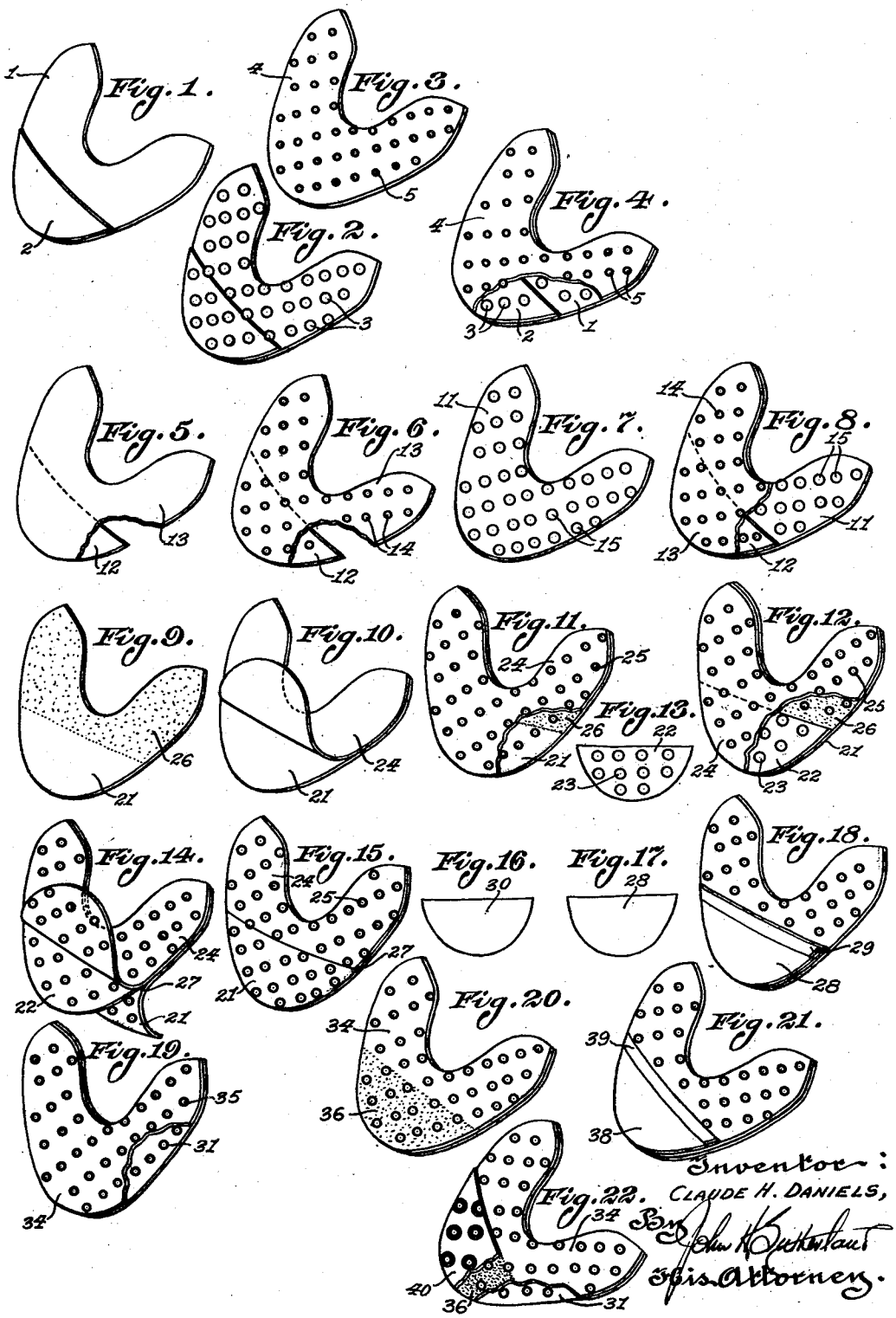
Feb. 27, 1940. C. H. DANIELS 2,191,906

ART OF MAKING SHOES

Filed Aug. 25, 1934 2 Sheets-Sheet 1



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ART OF MAKING SHOES

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Fig. 23.

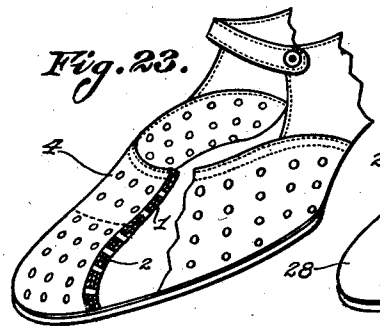


Fig. 24.

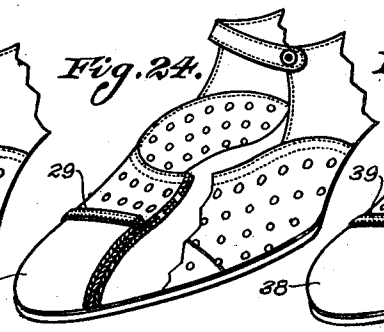


Fig. 25.

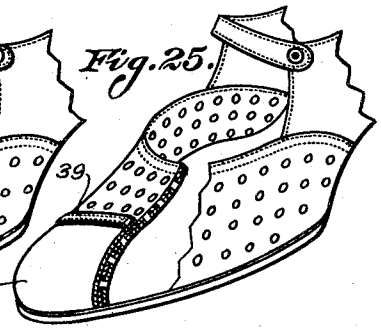


Fig. 26.

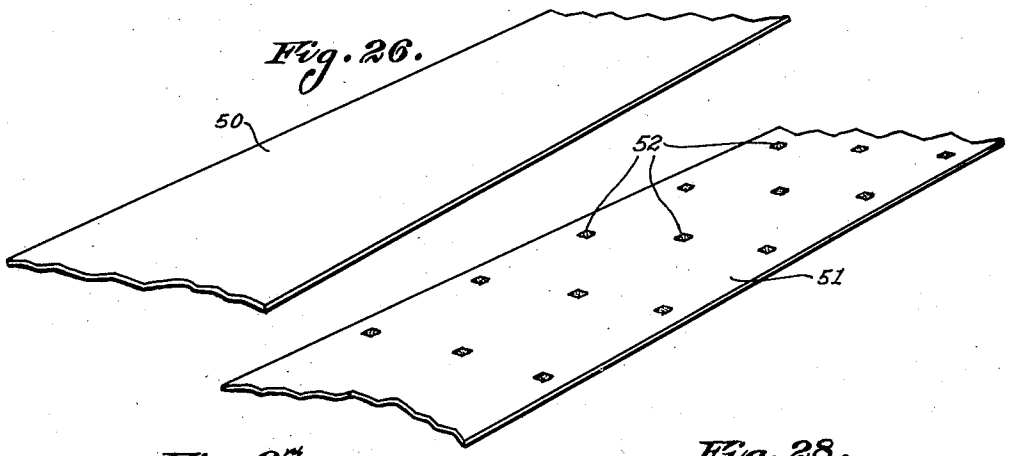


Fig. 27.

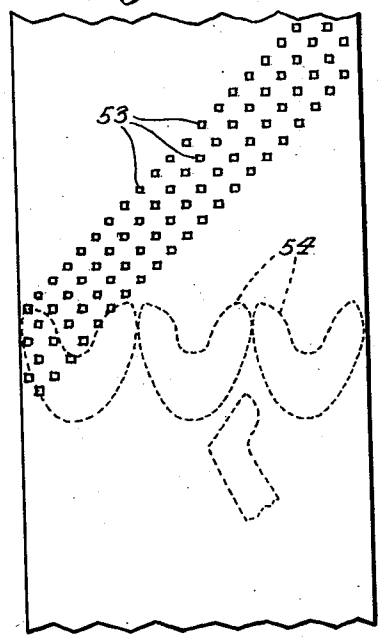


Fig. 28.

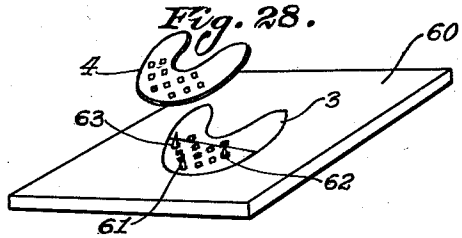
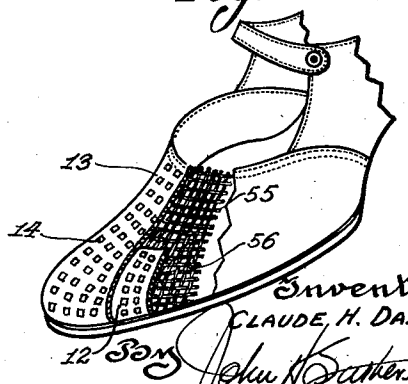


Fig. 29.



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UNITED STATES PATENT OFFICE

2,191,906

ART OF MAKING SHOES

Claude H. Daniels, Wellesley Hills, Mass.

Application August 25, 1934, Serial No. 741,371

1 Claim. (Cl. 12—145)

This invention relates generally to shoes, and particularly to a toe construction for perforated shoes and the process of making the same.

In shoes of the perforated type wherein openings are provided in the tip of the shoe, or in the region usually occupied by the toe stiffener, it has heretofore been the practice to secure together by adhesive, or otherwise, the vamp, vamp lining and toe stiffener which are then simultaneously perforated in the desired manner, the openings extending entirely through the three layers so as to provide a ventilated toe. Although such procedure is perhaps the most satisfactory and convenient one for general purposes, there are, nevertheless, some instances wherein that procedure does not conveniently fit into the manufacturing practice. For instance, in the practice hereinafter more fully described wherein a sheet of upper material, such as calf skin, of substantial size is perforated before being cut up into sections of upper material according to patterns, it is apparent that the procedure above referred to may be advantageously modified. Accordingly, it is an object of the present invention to provide a process of making perforated shoes wherein pre-perforated, or open-work material may be employed as one of the layers of an assembly comprising a vamp, toe stiffener and lining, while the other two layers may be conveniently perforated together.

Another object of this invention is to provide a process of making shoes of the ventilated type wherein the openings in separately perforated layers may be readily alined.

A further object of this invention is to provide a process of making ventilated shoes wherein the sections of upper material are cut from pre-perforated material so that the perforations in the respective upper sections extend overboard.

A further object of this invention is to provide a toe construction for perforated or open-work shoes wherein a relatively stiff toe may be conveniently provided.

A more specific object of this invention is to provide a process of making perforated or open-work shoes wherein one or more of the layers of material may be perforated separately from the others, and readily arranged with the other layers so that substantially all the openings will be in at least partial alinement.

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

Figures 1, 2, 3, and 4 are perspective views diagrammatically illustrating the procedure in accordance with one embodiment of the present invention;

Figures 5, 6, 7 and 8 are similar views diagrammatically illustrating the procedure in accordance with another embodiment of the invention;

Figures 9, 10, 11 and 12 diagrammatically illustrate the procedure in accordance with another embodiment of the invention;

Figure 13 is a plan view of a pre-perforated toe stiffener suitable for use in the embodiment illustrated by Figures 9 to 12 inclusive;

Figure 14 is a view illustrating the final step of a modified procedure otherwise the same as that shown in Figures 9, 10 and 11;

Figure 15 is a view showing the arrangement of vamp and lining wherein the perforated vamp terminates at about the tip line;

Figure 16 is a plan view of a toe stiffener employed with the vamp shown in Figure 15;

Figure 17 is a plan view of a toe cap which may be employed in connection with the embodiment shown in Figure 15;

Figure 18 is a view showing the parts of Figures 15, 16, and 17 in superposed relation;

Figures 19, 20 and 21 are illustrative of another embodiment wherein the toe stiffener is applied to the exterior of the vamp.

Figure 22 illustrates a modification of the latter procedure wherein a perforated toe cap is employed.

Figure 23 is a perspective view partly broken away and illustrating the forepart of a shoe constructed in accordance with the embodiment of Figures 1, 2, 3 and 4.

Figure 24 is a perspective view illustrating a shoe constructed in accordance with the embodiment shown in Figures 15 and 18;

Figure 25 is a perspective view of the forepart of a shoe showing the construction illustrated in Figures 19, 20 and 21.

Figure 26 is a perspective view showing a sheet of upper material and backing such as a lining to be perforated in accordance with the present invention.

Figure 27 illustrates the sheet of upper material of Figure 26 after being perforated and indicates by outline the manner in which the upper sections may be cut therefrom.

Figure 28 is a perspective view of a board arranged to facilitate alinement of the perforations of several layers.

Figure 29 is a view of the forepart of a shoe wherein an open-work fabric lining is employed.

In accordance with the present invention gen-

erally stated, the toe part of a shoe which comprises generally a vamp, lining and toe stiffener may be perforated through and through to produce a ventilated shoe. The present invention contemplates a procedure wherein one or more of the layers mentioned may be separately perforated and thereafter alined with the openings which have been formed in the other layer or layers. In accordance with the present invention, and particularly when it is desired that substantially all the openings should be in at least partial alinement, such alinement may be conveniently accomplished by punching smaller holes in the outside layer than are punched in one of the layers beneath. For instance, if the vamp and vamp lining are secured together so as to form corresponding openings in each layer, or if they are formed from layers of pre-perforated or open-work material having openings of substantially the same size and in alinement, a toe stiffener provided with openings arranged in substantially the same manner but of larger size than those in the vamp may be readily applied to the assembly so that the holes will more or less aline themselves. Of course, the holes in the separately applied layer, such as the toe stiffener, may be of the same size as the holes in the other layers, but in this case more care must be taken in alining the openings. In the latter case two or more pins or pegs may be set in a board so as to fit certain perforations of one layer and expedite the alinement of corresponding perforations of another layer therewith.

Moreover, by inserting the toe stiffener subsequently to the assembly of the vamp and lining, it is possible to treat the stiffener in such manner that it will set up to form a stiffer toe than would otherwise be possible. For instance, if the perforated vamp, vamp lining and toe stiffener be so assembled that a surface of the toe stiffener is readily exposed, this surface may be treated by a suitable stiffening agent, such for instance as shellac, or even "wetted up" so that after lasting the stiffener will conform itself more or less rigidly to the shape of the last.

Referring now to the drawings, and particularly to Figures 1, 2, 3, 4 and 23, an embodiment is illustrated wherein a vamp lining 1 may have a toe stiffener 2 connected thereto as by adhesive, or otherwise, and these two joined layers may then be simultaneously perforated with one or more openings, such as 3 as shown in Figure 2. With the perforated lining and toe stiffener may be assembled a pre-perforated vamp 4, as shown in Figure 3, which in the embodiment as illustrated is provided with openings 5 of similar arrangement, but of smaller size, to the openings in the vamp lining and toe stiffener 1 and 2. The perforated vamp 4 may be superposed upon the perforated lining and toe stiffener, as shown in Figure 4, and with little difficulty substantially all of the openings 3 may be caused to aline themselves partially, at least, with the openings 5 in the outside layer. These three layers may be connected together as by adhesive or stitching, or may be lasted without permanent general adhesion, the difference in the size of the openings allowing for some displacement during the course of manufacture. It is ordinarily more practical, however, to secure the respective layers together, at least temporarily, so as to prevent extreme displacement between the layers.

In order to facilitate alinement of the perforations in the respective layers, a board 60 shown in Figure 28 may be provided with two or more pins or pegs such as 61, 62 and 63 which project above the surface thereof and are arranged to fit the openings in one layer, for instance, the lining 3. When corresponding openings 64, 65 and 66 of vamp 4 are placed over pins 61, 62 and 63 respectively, the parts will be properly alined and may be cemented together in that relation.

Referring now to Figures 5, 6, 7 and 8, another embodiment is illustrated wherein the toe stiffener 12 may be secured by adhesive, or otherwise to the underside of an outside vamp section 13. The layers 12 and 13 may then be simultaneously perforated to produce one or more openings 14, as shown in Figure 6. With the perforated vamp and toe stiffener may then be assembled a pre-perforated vamp lining 11 in which the perforations 15 are, in the embodiment illustrated, of substantially larger size, but of similar arrangement to the openings 14. These layers may be super-imposed, as illustrated in Figure 8, the larger openings 15 being readily alined with the smaller openings 14 in the outside layer. As pointed out in connection with the previous embodiment, the holes in the lower layer may be of substantially the same size as the holes in the outer layer, but for convenience in assembling, and particularly when it is desired that substantially all the holes should be in at least partial alinement, the larger holes may be provided in the lower layer. It will be understood, of course, in lieu of the pre-perforated lining a suitable open-work fabric may be employed, but in this case when it is desired that the ventilated openings be unobstructed, care should be taken to select a fabric, the openings of which correspond to the arrangement of the perforations in the outside layer.

Referring now particularly to Figures 9 to 13 inclusive, a vamp lining 21 may have a film of adhesive 26 applied thereto in the region rearwardly of the tip line, as shown in Figure 9. Similarly a corresponding film of adhesive may be applied to the understide of an outside vamp section 24 and these two layers may be assembled so that the tip portions thereof may be readily separated, as shown in Figure 10. This assembly may then be perforated with one or more openings 25, as shown in Figure 11, the tip portions as illustrated being readily separable since, as mentioned above, the adhesive 26 need not extend forwardly of the tip line. A pre-perforated toe stiffener 22 having a series of openings 23 of larger size and arranged in the same manner as openings 25 may then be inserted between the readily separable tip portions of vamp 24 and lining 21 so that the openings readily aline themselves. The toe stiffener 22 may be secured between the vamp 24 and lining 21 by any suitable means as by stitching, or by coating one or more surfaces of the adjacent layers with an adhesive and pressing together in a manner familiar to those skilled in the art.

In carrying out the invention, as just described, the toe stiffener 22 may be inserted between the lining 21 and the vamp 24 and secured to these layers in the region of the tip line 27 by a line of stitching or by a narrow film of adhesive so that the surfaces of the toe stiffener 22 may be exposed as shown in Figure 14. In this manner the toe stiffener may be treated without injuriously affecting the outside vamp or lining. With this arrangement it becomes possible to wet up the toe stiffener in a manner familiar to those skilled in the art,

and last it in temper so that it may set to form a stiffer toe construction than would otherwise be obtained. Alternatively a suitable stiffening agent, such for instance as shellac, may be applied to one or both surfaces of the toe stiffener 22 so as to produce a stiffer toe. It may be pointed out that the toe stiffener 22 may be joined throughout, as by adhesive, to one or the other of layers 21 or 24 and that the stiffening treatment may still be applied so long as at least one surface of the stiffener 22 is accessible.

Referring now particularly to Figures 15 to 18 inclusive, after the vamp lining 21 has been secured to a vamp 24 as described in connection with Figures 9 and 10, the vamp may be cutoff along the tip line 27 so as to produce a terminal portion 28, as shown in Figure 17, which later is to be used as a toe cap. The assembly of lining 21 with the cutoff vamp 24 may then be perforated to produce openings 25 therein. The tip portion 28 having been removed from vamp 24 prior to perforation of the latter, however, will remain imperforate, as shown in Figure 17. The tip portion 28 may then be connected with the forwardly extending portion of the vamp lining 21 to form an imperforate toe cap. In doing so the rear edge of the tip portion 28 may be skived and folded in a manner familiar to those skilled in the art and may be secured at the tip line to the vamp 24 as by stitching or otherwise. As an alternative form the rear edge of tip portion 28 may be connected to the adjacent parts by a strip 29 stitched, or otherwise suitably secured in position. With this construction, it will be understood, that a toe stiffener 30, which may be imperforate, may be inserted at any desired point in the operation and handled in the usual manner.

Referring now to Figures 19, 20 and 21, a vamp lining 31 may be secured by general adhesion to a vamp 34 and these simultaneously perforated with a series of openings 35. In accordance with this embodiment the toe stiffener may be applied to the exterior of the vamp in the form of a separate toe cap 38 to produce a shoe wherein a full perforated vamp which is convenient to manufacture extends to the tip of the shoe and is overlaid by an imperforate separate toe cap 38. In order to produce a construction having a considerable stiffness, a film of stiffening agent, such as shellac, or a suitable plastic capable of hardening may be applied to the tip portion of vamp 34 such as at 36. This in fact converts the tip portion of the vamp into a toe stiffener and it will be understood that the grain of the leather in this region may be roughened as by sanding in order to permit the stiffening solution to penetrate. This, of course, would mar the appearance of the vamp if it were not to be covered by a toe cap 38 which, as shown in Figure 25, produces a shoe which is of excellent appearance and good construction. It will be understood, of course, that the rear edge of the toe cap 38 may be skived and folded or may be connected to the adjacent vamp through a strip 39 secured by stitching, or otherwise to the adjacent materials.

It will be understood that the same features of construction may be carried out in connection with a perforate toe cap, as shown at 40 in Figure 22, which otherwise corresponds to the procedure just described. The toe cap 40 may, if desired be punched separately from the vamp 34 and lining 31. In this case it may be pointed out that the openings in the toe cap may be somewhat larger than the openings in the lower layers, particularly in shoes of the type wherein, for decorating purposes, it is desirable that some of the layer beneath be made visible through some of the larger openings above.

In Figure 29 is illustrated a shoe having an open-work fabric lining wherein the vamp and toe stiffener have been assembled and perforated as described with reference to Figures 5 and 6, but it will be understood that the openwork fabric lining may be employed in the other embodiments as well. In this case an open-work fabric 55 may be selected wherein the openings 56 are of substantially the same arrangement as the perforations in the vamp so that alinement may be readily accomplished.

In Figures 26 and 27 there is illustrated a convenient procedure for providing pre-perforated vamps, linings and the like. In accordance with this procedure a sheet of material of substantial size may be perforated with a series of apertures, as is illustrated in Figure 27, and from this pre-perforated sheet the upper sections, whether vamps, quarters, panels, or otherwise, may be cut to provide pre-perforated sections, and it is to upper materials produced in this manner that the features of the present invention find a particular applicability. As illustrated in Figure 26, a sheet 50 of upper material which may be, for instance leather, may be backed with a sheet of lining material 51 which may likewise be leather, or suitable fabric such as rubberized fabric so that it will stand the perforation, and be permanently, or semi-permanently, attached to the upper material 50 as by spots of adhesive 52. When the material is to be used in connection with some embodiment of the present invention, such as that illustrated in Figures 19, 20 and 21, the lining layer may be permanently adhered to the layer 50, but when it is desired to separate the two layers in order to insert a toe stiffener, such as would be the case in the embodiment described in connection with Figures 9 to 12 inclusive, it is apparent that the adhesion should be of a semi-permanent nature. With the layers 50 and 51 thus connected together the sheet may be run through a suitable perforating machine to punch the material in any desired manner, to provide a series of apertures 53. From the sheet punched in this manner the upper sections, such as vamps 54, may then be cut. It will be understood, of course, that this mode of procedure may be practiced upon sheets of upper material without backing and on sheets of lining material without the upper material, or a sheet of stiffening material, such as fabric which may be heavy drill, or rubberized fabric, may be interposed between the lining and outside layer if desired, so that all may be perforated concurrently.

From the foregoing description it is apparent that the present invention contemplates the mode of procedure for the making of ventilated shoes wherein the toe portion is perforated through and through, wherein one or more layers of material may be perforated separately or may be formed of open-work, and whereby the openings of the separately perforated layers may be readily alined one with the other. Although in the foregoing description it has been pointed out that in order to facilitate at least partial alinement of substantially all the openings, it is convenient to form the openings in the outside layer of a smaller size than the openings in the layers beneath, but it is obvious that the

openings may be formed of the same size throughout, and the alinement accomplished with more care. Moreover, in cases where it is not particularly desired that all the openings need be alined, but that only some be alined, it is apparent that openings of this arrangement may be provided.

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 claim.

Having thus described the invention what is claimed is:

In the art of making shoes the process comprising, attaching a vamp and vamp lining together rearwardly of the tip line and perforating the attached vamp and vamp lining, attaching a toe stiffener to one of said parts in the region of the tip line so that both surfaces of the toe stiffener are accessible, treating the toe stiffener in a manner such as to preliminarily soften but to subsequently stiffen the same, and lasting the shoe before the treatment is effective to stiffen the toe stiffener.

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