

No. 649,884.

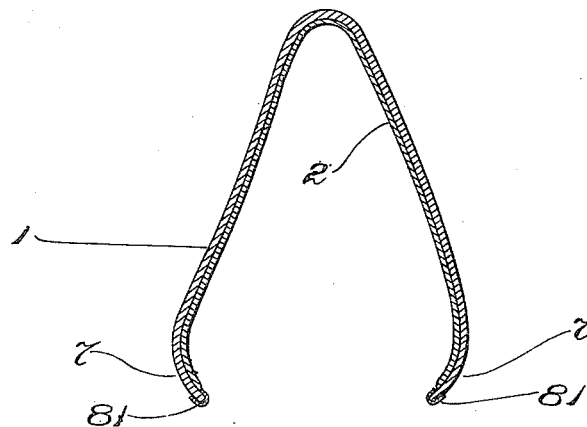
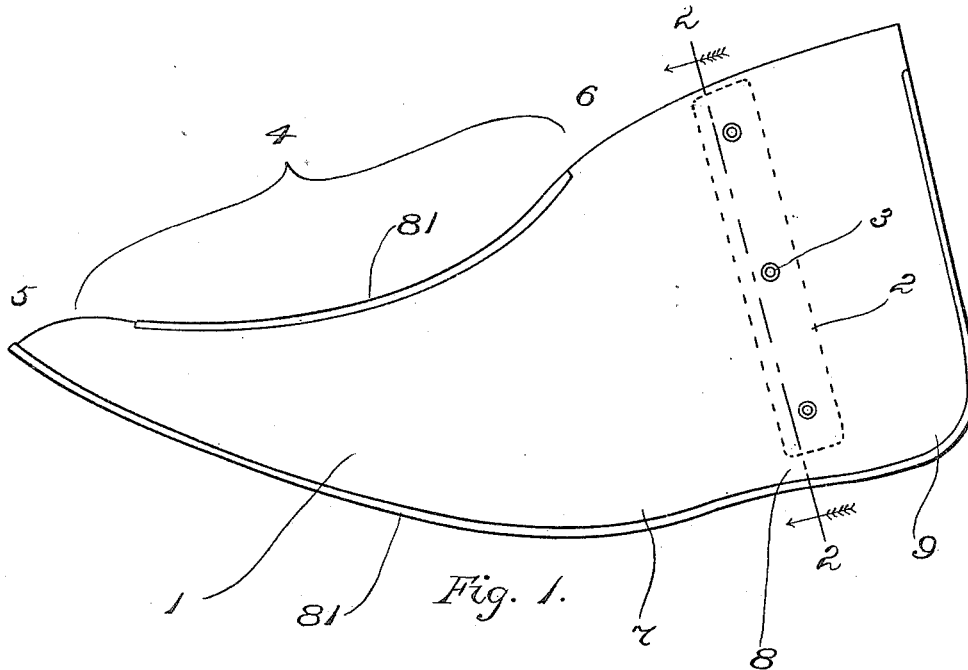
Patented May 15, 1900.

E. ANDREWS.
SHOE FORM.

(Application filed Apr. 29, 1898.)

(No Model.)

2 Sheets—Sheet 1.



Witnesses:

Oscar F. Hill
Edith J. Anderson.

Fig. 2.

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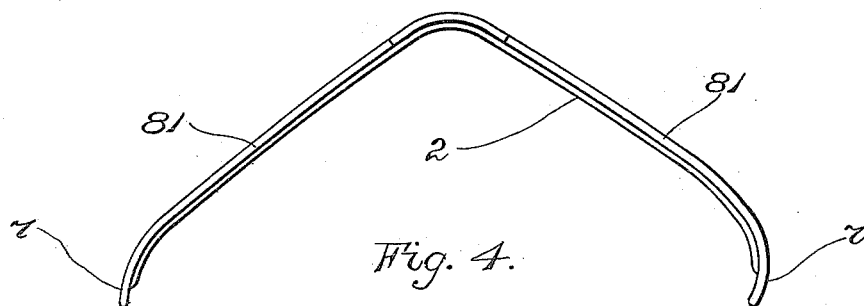
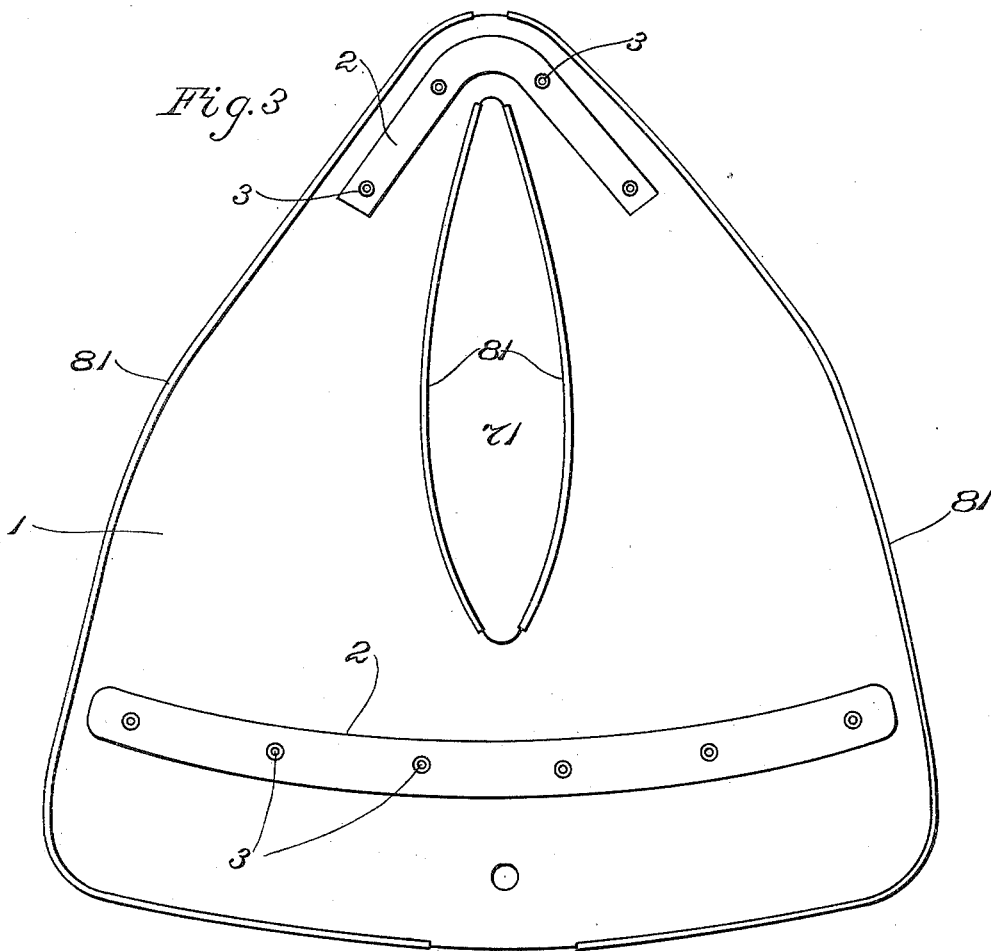
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Edith J. Anderson.

Inventor

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UNITED STATES PATENT OFFICE.

EMERY ANDREWS, OF KENNEBUNK, MAINE.

SHOE-FORM.

SPECIFICATION forming part of Letters Patent No. 649,884, dated May 15, 1900.

Application filed April 29, 1898. Serial No. 679,166. (No model.)

To all whom it may concern:

Be it known that I, EMERY ANDREWS, a citizen of the United States, residing at Kennebunk, in the county of York and State of Maine, have invented certain new and useful Improvements in Shoe-Forms, of which the following is a specification, reference being had therein to the accompanying drawings.

The invention is an improvement in bottomless or hollow shoe-forms which are designed to hold the uppers or vamps of boots and shoes in expanded form during the several stages of finishing the boot or shoe which follow the withdrawal of the solid last or while the boot or shoe is exposed for sale; also, an improvement in the process of making such forms.

The invention will be described first with reference to the accompanying drawings, in which I have illustrated a form made in accordance with my invention, and afterward the distinguishing and characteristic features of the invention will be particularly pointed out in the claims.

In the said drawings, Figure 1 is a view showing the said form in side elevation. Fig. 2 is a view thereof in section on the line 2 2 of Fig. 1 looking in the direction which is indicated by the arrows at the ends of such line. Fig. 3 is a view of the form, showing it inverted and flattened out. Fig. 4 is a view of the form, looking at the larger end thereof, showing the same in the shape which it tends normally to assume.

Hollow or bottomless shoe-forms of this same general character have been made heretofore, and various materials—such as leather, leather-board, and felt—have been used in the production thereof. The general use of such forms, however, has been restricted by the cost of the articles as offered on the market, due either to the cost of the material or the process of manufacture. Leather-board is comparatively inexpensive and has qualities which render it desirable as a material of which to make the forms; but there are difficulties attendant upon its employment which enhance the cost of production of the forms. Leather-board is so elastic in its nature and so comparatively difficult to set into the desired shape of a shoe-form by a molding operation when introduced into the molds

or dies in a dry condition that in order to mold a blank of dry leather-board into the shape of a form and cause it permanently to retain such shape it becomes necessary to subject the said blank to heavy and long-continued compression. It has been proposed in order to avoid such extent of compression to moisten the blank. In the first case the necessity for a comparatively-long continuance of the compression limits the rate and greatly increases the cost of production. In the case of a moistened blank, while it more readily assumes the desired shape of the form, nevertheless if removed from the molds before having become dry it will shrink and warp out of shape in the course of the drying. This renders the rate of production exceedingly slow and necessitates the employment of a great number of dies, which enhances materially the cost of production of the forms. The foregoing disadvantages are experienced in the case of other materials than leather-board.

One object of my invention is in part to cheapen the cost of production by simplifying and expediting the process of manufacture. To the latter end I aim to enable the blank to be used in a dry condition and also to enable the form to be given its permanent shape by a compression of brief duration.

Another object of the invention is to improve the character of the finished form.

My invention consists in certain features of construction which improve the character, strength, and durability of the form and at the same time expedite the molding operation by enabling the blank to assume more readily than heretofore the desired shape of the finished form, and which also enables the blank to be molded in a dry condition and to be removed at once from the molds or dies without tending to depart subsequently from the proper shape.

The invention consists also in an improved process of manufacture.

I designate in its entirety the form which is illustrated in the drawings. It corresponds with the vamp portion of the shoe, into which it is introduced, and it is composed, chiefly, of a sheet or blank of suitable material to which is given at the outset substantially the outline that is presented in Fig. 3. The final

shape of the form is communicated thereto, as hereinbefore indicated, by a molding operation. Usually I employ for the body of the form a sheet of fibrous material like that which is used for counter-stiffeners, the same commonly being termed "leather-board." This is tough, elastic, and sufficiently stiff and rigid for the purpose. The form is substantially arch shape in cross-section, with its free edges rounded over and bent inwardly somewhat and also bent laterally, as at 7-8, Figs. 1, 2, and 4. In introducing the same into a shoe its sides are compressed or flattened together more or less. Subsequently the elasticity of the form causes its sides to spread apart within the shoe. I usually aid the elasticity of the sheet of material of which the body of the form is composed by applying to the under side of the said sheet springs (herein designated 2 2) each constituted by a strip of steel that is affixed by rivets 3 3 to the under side of the sheet of material. By means of this elasticity it is possible to employ such forms in almost any size of boot or shoe within certain extreme limits.

An important consideration is the fact that it is difficult when dealing with the heavy, comparatively-unyielding, and dense material of which the body of the form is composed to depress the said body along the median ridge sufficiently to form the required concavity 4 and at the same time to dispose of the displaced or surplus material. I have succeeded in effecting this in a practical and satisfactory manner and in rendering the forward portion of the form self-adjusting by slotting the blank along the median line thereof throughout the length of the concavity or depression 4. The existence of the slot enables the edges of the slot to adjust themselves by movement inwardly toward each other as they are depressed when compression is applied in the molding operation. There is consequently no outward displacement of surplus material, and hence the blank takes precisely the intended form without tendency to the production of wrinkles, bunches, or protuberances. Preferably I remove sufficient of the material of the blank to dispose of the surplus material which would have a tendency to accumulate at or near the median line in the process of molding. This removal produces an approximately oval or elliptical slot 71 in the blank like that which is represented in Fig. 3, the said slot being of such width that the edges thereof after the molding lie in the line of the concavity 4. After the molding the edges of the said slot lie in close proximity to each other in the form. For the purpose of assisting in retaining the form in shape and preventing the material of which the body thereof is composed from gradually losing its shape and flattening-out after the removal of the form from the molds or dies I apply to the blank, at or near the edges thereof, metallic strips 81 81. I find it advantageous to supply these strips

to the edges of the slot 71 as well as to the exterior edges of the body of the form. These strips are composed of a suitable ductile or non-resilient material having capacity for retaining the shape which is given thereto. The strips applied to the exterior edges of the form extend from near the bend or middle of the toe portion thereof to near the bend or middle of the rear portion thereof, a break being left between their proximate ends at each extremity of the form to permit or facilitate the bending of the latter. The said strips are shaped to conform to the contour of the finished form. It is advantageous to so apply the said shaping-strips as that they may serve also as covers for the edges of the body of the form and protect and finish such edges. Therefore, preferably, they are made U-shaped in cross-section and are caused to receive and clasp the edges to which they are applied. They are secured in place in convenient manner, as by compressing them upon the said edges.

I have learned through practical experience in the production of the form hereinabove described that it is not advantageous to first mold the blank into shape and then apply the shape-retaining strips. It is very difficult to do this on account of the resiliency of the material of the body of the form, which on leaving the mold tends to resume its original flat shape. After various trials and experiments I have discovered that the form in its most complete and perfect shape can be most conveniently, expeditiously, and economically produced by first cutting the sheet of material into the required outline and forming the slot 71 therein, then binding the edges, and after applying and securing the binding-strips effecting the molding, bending both the said sheet of material and the metal strips into the desired shape of the form at the same time, whereby the metal strips, being of non-resilient material, hold the blank in the form given it by the molds. The great advantage which is incident to the use of the metallic shaping-strips is the fact that in consequence of being themselves molded into proper shape they act to hold the form from departing from the shape that is given by the molds or dies. It is no longer necessary to depend upon subjecting the form to long-continued and excessive pressure within the molds for the purpose of causing the same to become set in shape. A moderate and reasonably-brief period of compression answering to cause the blank and its applied metal strips to conform fully to the molds or dies is all that is necessary.

I prefer to use as material for the form a moderately-soft fiber-board, which, with the assistance of the shaping-strips, will retain the shape given by the molds or dies, and after the molding to apply to the forms a suitable stiffening and waterproofing solution—such, for instance, as one composed of rosin dissolved in naphtha.

I claim as my invention—

1. The improved molded bottomless shoe-form composed of a sheet of fibrous material having ductile or non-resilient shaping and binding strips secured along the edges thereof, substantially as described.

2. An improved molded bottomless shoe-form composed of a sheet of fibrous material some of which is cut out or removed along the median line of one portion of the sheet to form an opening or slot, as 71, the said form being provided with ductile or non-resilient metallic shaping and binding strips along its edges and about said opening.

3. An improved molded bottomless shoe-

form composed of a sheet of fibrous material some of which is cut out or removed along the median line of one portion of the sheet to form an opening or slot, as 71, the said form being provided with ductile or non-resilient metallic shaping and binding strips along its edges and about said opening, and the said form being also provided with springs 2, 2.

In testimony whereof I affix my signature in presence of two witnesses.

EMERY ANDREWS.

Witnesses:

CHAS. F. RANDALL,

WM. A. MACLEOD.