

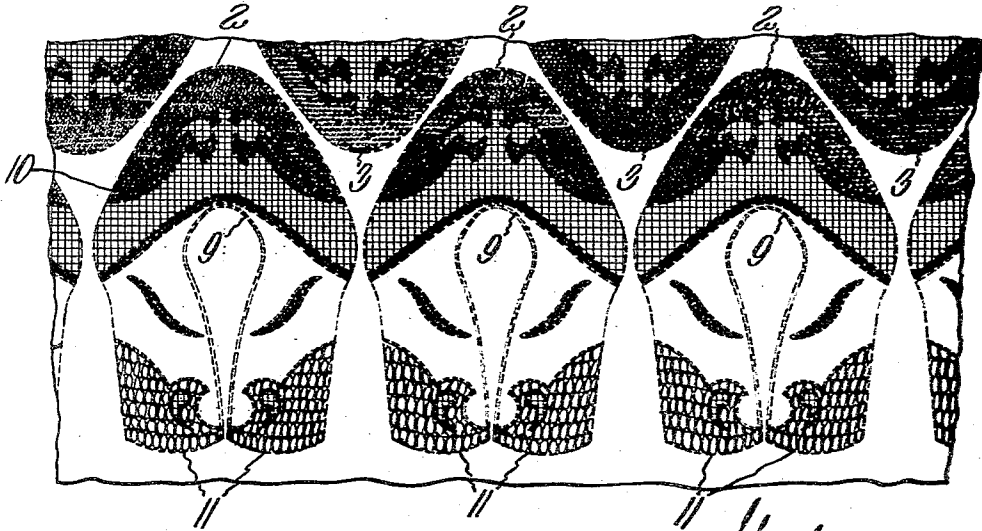
May 1, 1934.

F. L. AYERS

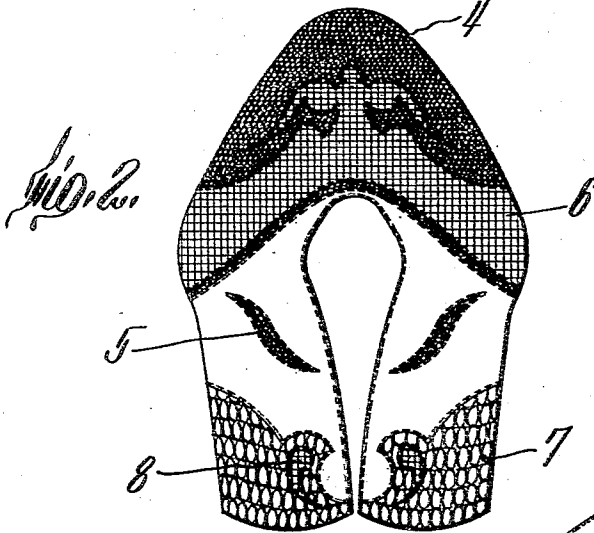
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SHOEMAKING

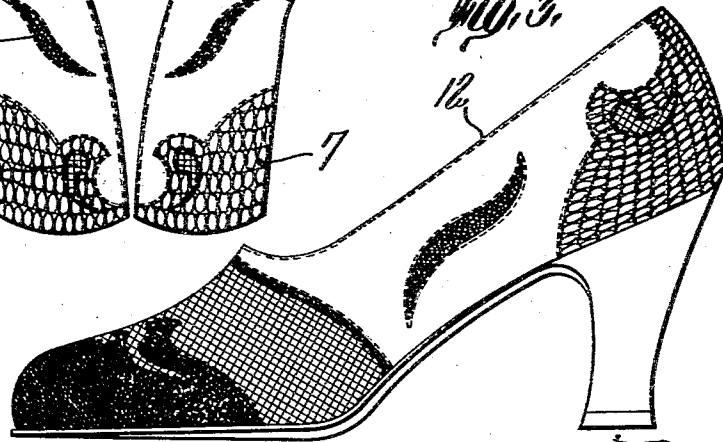
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*Fig. 1.*



*Fig. 2.*



*Fig. 3.*

*Inventor*  
*Fred L. Ayers*  
*by Knight, Owen, Lambly & King*  
*Attys*

# UNITED STATES PATENT OFFICE

1,956,969

## SHOEMAKING

Fred L. Ayers, Portland, Maine, assignor to Brown Company, Berlin, N. H., a corporation of Maine

Application September 14, 1931, Serial No. 562,651

2 Claims. (Cl. 41—17)

In women's novelty or stylish shoes, the upper is made up of many pieces of leather, some of which, like reptile skin, are multi-colored. The cutting or dieing out of the pieces and their stitching into an upper is a matter of considerable expense, especially when as many as, say, twenty pieces are used in making a pair of uppers. In assembling the upper, the pieces are stitched together in overlapping relation, some pieces being placed directly over others to form so-called "overlays", and others having cut-outs backed up by pieces which form so-called "underlays". This gives rise to a large number of exposed raw edges which detract from the appearance of the shoe.

The primary object of my invention is to do away with the cutting and stitching together of many pieces of different leathers in making the uppers of women's novelty or stylish shoes of the character of opera or D'Orsay pumps, oxfords, fancy straps, etc. In accordance with my invention, this object is attained by impressing on the surface of a flat sheet of pre-fabricated shoe upper material a facsimile design of a shoe upper of any desired stitched multi-piece and multi-color pattern laid out flat, then cutting or dieing out from the sheet a one-piece upper blank containing the replica, stitching together the edges to constitute the back seam, and assembling with other shoe parts after the manner of customary shoe making. Aside from the fact that my invention makes possible the production of fancy shoes at exceedingly low cost, the finished shoe presents a highly attractive appearance because of the smoothness of the upper, that is, its freedom from raw and unsightly edges. The facsimile design may be transferred to the shoe upper material by any well-known process or combination of processes, such as decalcomania, lithographic, color-printing, embossing, etc. The one-piece upper may simulate an upper containing underlays and overlays which even extend under the last, in which case no difficulty is encountered in lasting; whereas, in the multi-piece upper, varying thicknesses of material and irregular edges must be contended with and must be made to lie smoothly on the inner face of the outer sole. My invention is highly practicable in connection with pre-fabricated shoe upper material, by which I mean artificial leathers or the like which are made as sheets of uniform thickness and other characteristics throughout their body portion. As is well known, hides or skins of natural leather present different shapes and sizes and are further variable in their thick-

ness and other characteristics, wherefore a one-piece upper cut therefrom would be non-uniform unless cut from a carefully selected area and with prohibitive waste of hide or skin. My invention can, for example, be advantageously applied to artificial leathers comprising a bibulous foundation of interfelted cellulose fibers prepared on machinery of the paper-making type as a sheet of uniform thickness and width and then impregnated with rubber latex or equivalent compositions, which, after drying, impart to the foundation leather-simulating qualities including toughness, stretchability, tear resistance, pliancy, ability to withstand repeated flexings, etc.

With the foregoing and other features and objects in view, I shall now describe my invention in further detail in conjunction with the accompanying drawing, wherein,—

Figure 1 represents in plan view a fragment of pre-fabricated upper material on which has been impressed facsimile designs of multi-piece and multi-color pump uppers.

Figure 2 similarly represents a one-piece upper blank containing the design as dieed out from the sheet.

Figure 3 is a side view of a finished pump made with the one-piece upper.

Assuming that one has a flat sheet of pre-fabricated shoe upper material of the desired uniformity in thickness and other qualities, the facsimile designs of the desired collapsed shoe uppers may be transferred thereto by any well known process and they may be arranged, as shown in Figure 1, in rows transversely of the sheet. Each design may extend longitudinally of the sheet, by which I mean that its longitudinal median line lies longitudinally of the sheet. The toe portions 2 of the designs of one row may be arranged in staggered relationship with, and facing, the toe portions 3 of the next succeeding row of designs, for, as shown, there is ample area between toe portions of the designs of one row to accommodate the toe portions of the designs of the next succeeding row. This arrangement makes for a minimum waste of shoe upper material, but any other suitable arrangement may be used. The design chosen for purpose of illustration, as best shown in Figure 2, simulates a stitched multi-piece and multi-color shoe upper having a snake-skin toe portion 4 and snake-skin overlay 5 on the quarter, a black leather vamp 6 overlaid by a fancy-edged toe portion, and a fancy-edged alligator skin overlay 7 on the quarter and underlaid by an odd-shaped piece 8

of black leather. As a matter of fact, this design may be one which has been secured, as by photography, from an assembled multi-piece shoe upper blank spread out flat, i. e., with its rear edges unattached. The photographic method of transfer, which includes photolithography and photogravure, may be so faithfully carried out that the replica has all the effects, including the fine lines and stitching, of the original. It is, moreover, possible to incorporate into the design highly artistic effects impossible of creation by cutting and stitching together small pieces of leather on account of the limitations in existing shoe-making machinery.

The shoe upper blanks are cut or died out from the sheet shown in Figure 1 by dies so constructed as to produce upper blanks of the desired size. The dies may be arranged on the designs to ensure the desired predetermined placement of effects in the finished shoe. In this connection, it is to be observed that the throat portion 9 of the design may be for any sized foot, but the edge portions 10 and back seam portions 11, known as the "lasting allowance", can correspond to the largest sized shoe manufactured and thus permit of any smaller sized upper blank to be cut within a single design. On the other hand, it is of course possible to employ designs which correspond to a particular size of shoe and to cut or die out the shoe upper on the marginal lines of the designs.

By my invention, it is possible to produce at low cost shoes like the fancy pump 12, shown in Figure 3, simulating an expensive shoe whose upper is multi-pieced and multi-colored. Buckles, buttons, bows, perforations and other ornamental effects may be included in the design without significant additional expense. My invention may be applied in making shoe uppers of a limited or few number of parts, say, including only vamp and quarter portions but simulating a multi-colored shoe upper of a much larger number of stitched parts, although, as already indicated, it is most economical and advantageous to apply it in making one-piece uppers. In addition to the advantages enumerated, a shoe upper embodying my invention can be lasted smoothly and without any trouble on account of yielding more in some places than in others, as is apt to be the case when many lines of stitching and pieces of leather of different characteris-

tics are subjected to pulling over the last. There is hence little tendency for distortion of the design in my shoe upper either during shoe-making or during wear of the finished shoe into which it is incorporated.

While it is possible to produce the shoe upper of the present invention by first cutting or dieing it out from a flat sheet of the upper material and then impressing the desired design thereupon, nevertheless, as already indicated, it is distinctly preferable from the standpoint of economy, first to impress the design on the sheet, as this latter sequence means that it is possible to impress progressively lateral rows of designs on a continuous sheet, as by multi-color printing rolls, and then, by gang dies, progressively to cut out from the sheet rows of uppers containing the designs. While not limited thereto, I again wish to emphasize the fact that my invention is valuable when applied more especially to pre-fabricated shoe upper material of the nature of artificial leather, which is of uniform character throughout and which is hence serviceable without much wastage. When applied either to pre-fabricated shoe upper material or to natural leather, it is of course desirable that water-insoluble dyes, inks, pigments, or the like, be used in making the colored designs, which, if desired, may then be finished and protected against abrasion by water-insoluble finishes or lacquers, e. g., nitro-cellulose lacquer.

I claim:

1. A method which comprises spreading out flat an assembled shoe upper of stitched, multi-piece, and multi-color design, transferring said design by a photographic process to a flat sheet of shoe upper material, and cutting out from the sheet a one-piece upper blank containing the photographed replica.

2. A method which comprises stitching together a number of multi-colored shoe upper parts, including parts of natural reptile leather, to form a fancy shoe upper, whose rear edges are unattached, spreading out flat said upper, transferring the design of said spread-out upper by a photographic process to a flat sheet of shoe upper material, and cutting out from the sheet a one-piece upper blank containing the photographed replica.

FRED L. AYERS.

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