

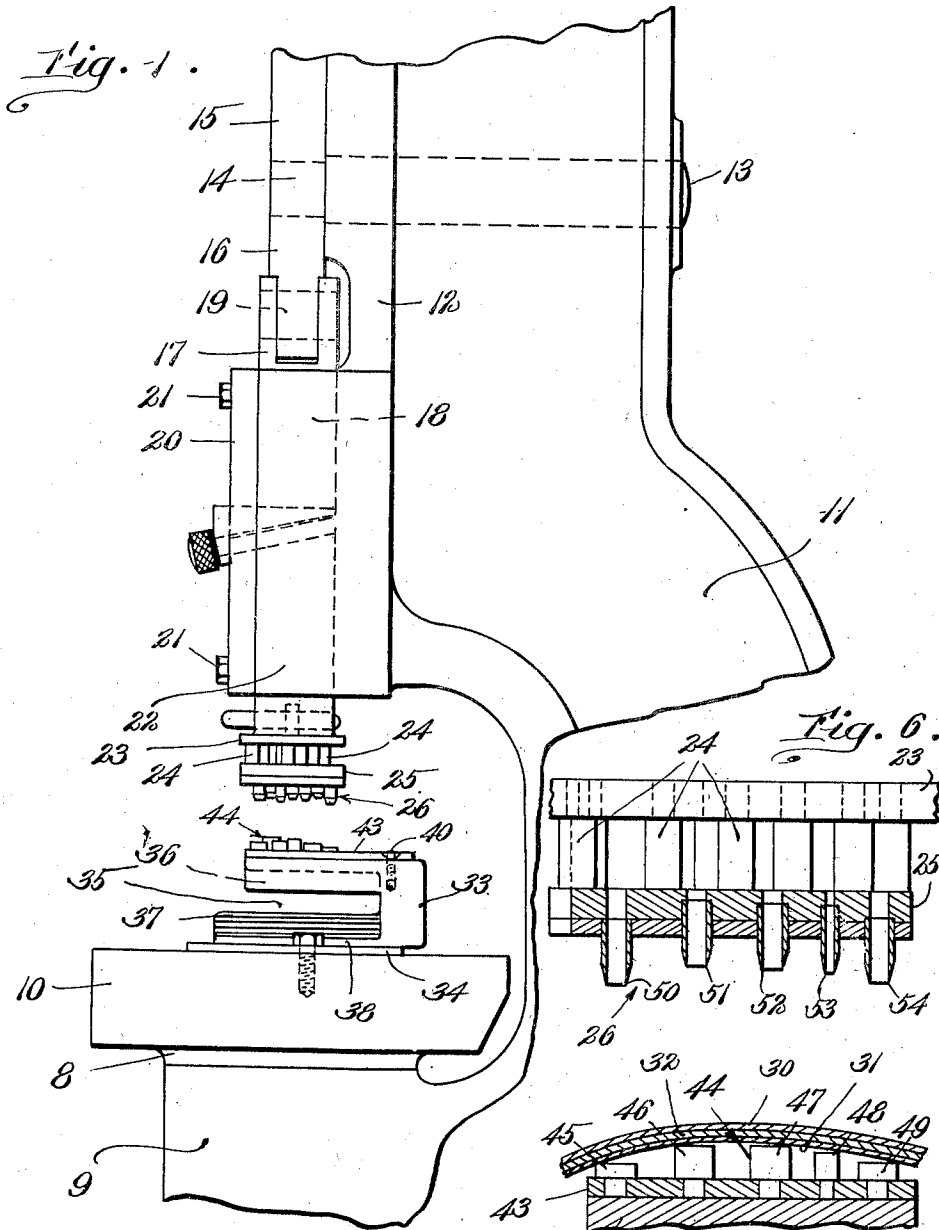
April 22, 1941.

A. W. ALTVATER
METHOD OF MAKING SHOES

2,239,377

Filed Nov. 6, 1939

2 Sheets-Sheet 1



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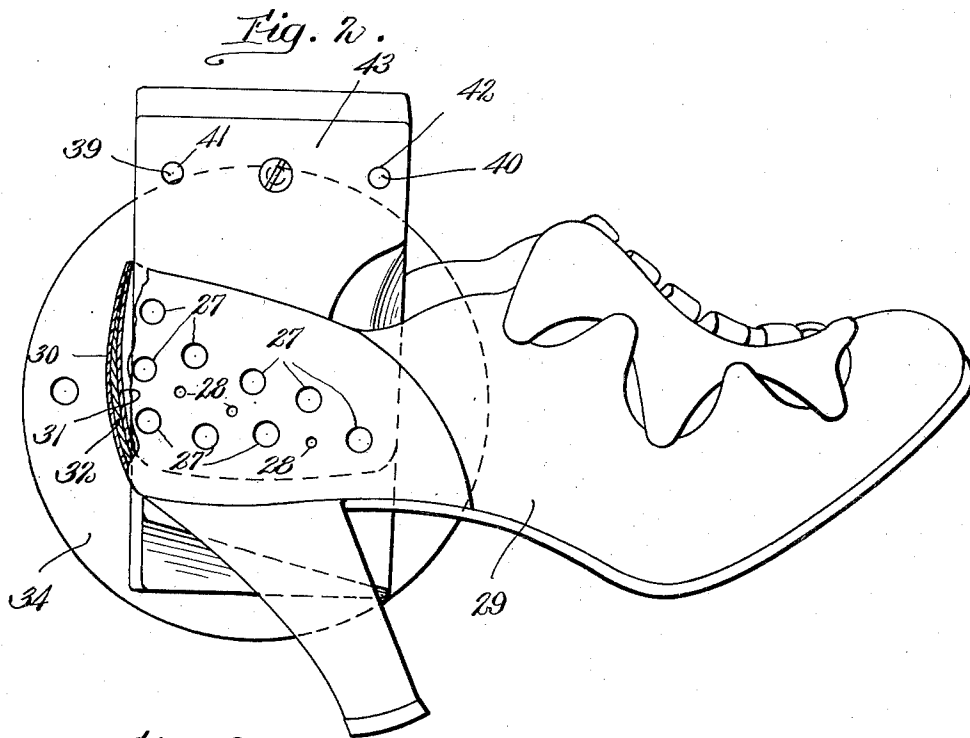
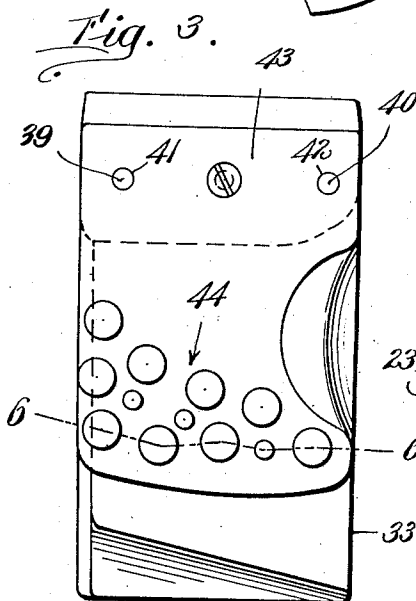
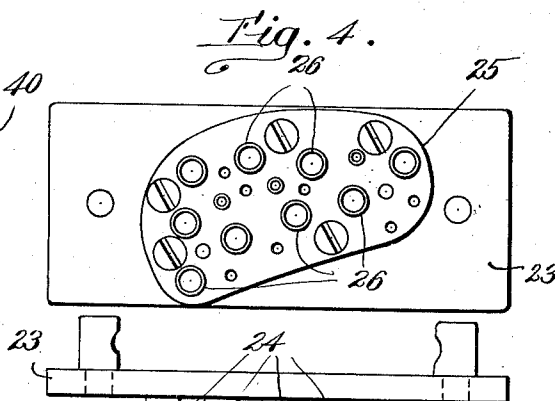
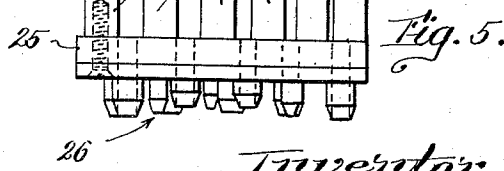
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A. W. ALTVATER
METHOD OF MAKING SHOES

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2 Sheets-Sheet 2



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UNITED STATES PATENT OFFICE

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METHOD OF MAKING SHOES

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1 Claim. (Cl. 12—142)

The present invention relates to methods for making shoes and to machines and dies for placing ornamentations such as cut-outs, perforations, and embossed designs on shoes, that have been completed, at least to the extent of being lasted, the uppers of such shoes embodying a counter which has been moulded either before assembly with the other component parts of the uppers or during the upper lasting operation.

At the present time, it is common practise in the shoe industry to perform cutting-out or perforating operations on fitted, and even closed, shoe uppers consisting of uppers, linings and reinforcing material, such as box-toes and counters, cemented between the uppers and linings. These shoe uppers have been cut-out or perforated with dies known as "Flat Bed Dies", the work being supported flatwise on a work support, or by interposing a work support between the opposite side faces of the fitted or closed upper, so that one side face is supported flatwise upon the top of the work support with the opposite side face tucked out of the way beneath an overhanging edge thereof.

It has been proposed heretofore also to perform the cutting-out or perforating operations on a closed upper after it has been lasted, but these operations have been limited to a portion of the upper capable of being spread out flatwise. While it is highly desirable that a curved portion of the upper be cut-out or perforated after the upper has been lasted, no way has been suggested heretofore how such operations could be performed. The rear portion of the upper of a lasted shoe includes the quarters, a lining and a counter interposed therebetween, which terms are used herein to include a one-piece vamp, plumping material and reinforcing material, respectively. During the lasting operation, the side faces of the upper, including the lining and the counter, are shaped to the curved sides of the last, so that the side faces of the portion of the upper including the lining and the counter present convex and concave curvatures on the faces which are exposed and unexposed to view in the shoe during use, respectively. Heretofore, if one face of such a curved portion of the lasted shoe were to be supported on the flat surface on an anvil, such surface would constitute a chord of the curved work arched unsupported above the anvil, with the result that the great pressure required to force the cutting edges through the three layers of material in the unsupported arched work would crush it and thus ruin the shoe. If an attempt were made to provide a con-

cave work supporting surface contacting the entire concave internal face of the lasted shoe at the counter portion thereof, the cutting edges would be obliged to project from a convex surface, an impracticable construction in any known machine which requires a straight line relative movement between the cutting edges and the striking surface thereof.

The principal objects of the present invention are to devise a method and produce a cutting machine or dies by which a lasted shoe upper, particularly at the curved rear side faces thereof, including the lining and a moulded counter, may be cut-out perforated or embossed in a rapid, reliable and economic manner.

To the accomplishment of these objects and such others as may appear hereinafter, the various features of the present invention relate to certain steps, constructions and arrangement of parts hereinafter described and then set forth broadly and in detail in the appended claim which possess advantages readily understood by those skilled in the art.

The various features of the present invention will be understood readily from an inspection of the accompanying drawings illustrating the best forms of the invention at present devised, in which,

Figure 1 is a detail view in right side elevation of a machine in general use for performing various operations in the manufacture of shoes, including cutting-out, perforating and embossing;

Fig. 2 is a detail view in plan of the work support for supporting one rear side face of a lasted shoe upper, the shoe illustrated, for convenience, being one that has been bottomed and heeled subsequent to the lasting operation;

Fig. 3 is a detail view in plan of the work support, the shoe having been removed therefrom;

Fig. 4 is a detail view in bottom plan of the die which is carried by the reciprocating plunger of the machine;

Fig. 5 is a detail view in front elevation of the overhead die, and

Fig. 6 is an exploded detail view in sectional elevation on the line 6—6, Fig. 3, with the addition of a view in sectional elevation of that portion of a lasted shoe upper including the lining and the moulded counter which is supported by a plurality of cutting edge striking surfaces for the perforating operation.

For convenience in disclosure, the various mechanical features of the present invention are illustrated and described as being embodied in the "Western" cut-out machine of the type disclosed

in the patents to Altwater, Nos. 1,834,919 and 1,938,678, granted, respectively, December 8, 1931, and December 12, 1933, in which machine the relative movement between the cutting edges and its cutting edge striking surface is normal thereto.

In the embodiment of the mechanical invention, illustrated in the drawings, the frame of the machine is shown as including a base 8, (Fig. 1), which is rigidly secured to a permanent horizontal support 9 mounted on legs, (not shown). Integrally formed with the base is an irregularly formed boss 10 constituting a work supporting bed. An overhanging arm is integrally cast with the base 8 and includes the standard 11 and the overhanging head 12. In the upper parts of the standard and head is an elongated journal for the drive shaft 13. This drive shaft is operated intermittently from a suitable source of power acting through a clutch, (not shown), the construction and mode of operation of which is described in the Altwater Patent No. 1,834,919, at page 2, lines 32 et seq.

The shaft 13 carries at its front end an eccentric 14 which rotates within a strap 15 having a downwardly extending arm 16. The arm 16 extends between a pair of spaced arms 17, forming upward extensions of a sliding plunger 18. A pin 19 provides a pivot connection between the arm 16 and the arms 17. The plunger 18 is mounted in a guideway formed on the front face of the head 12. A plate 20 having a rectangular cut-out portion is attached to the walls of the guideway by bolts 21. A die carrier in the form of a sliding block 22 is mounted in the lower part of the guideway in axial alignment with the plunger 18. The connection between the plunger and the die carrier is generally the same in construction and mode of operation as the connection shown in the Altwater Patent No. 1,938,678, so it is unnecessary to repeat that description.

The bottom face of the die carrier 22 is flat to receive flatwise one face of a plate 23 having depending posts 24, upon the lower ends of which the upper die 25 is carried. The connection between the die carrier 22 and the plate 23 is substantially the same as between the corresponding parts disclosed in the Altwater Patent No. 1,938,678. The upper die 25, as shown in Figs. 4 and 5, is provided with perforating tubes 26, arranged, (Fig. 2), to cut nine holes 27 and three pin perforations 28 in the side face of a lasted shoe upper 29 through the leather material 30, (Figs. 2 and 6), the lining material 31 and the counter material 32.

The opposite sides of the counter portion of the lasted shoe upper receive between them a work support 33, (Fig. 1), which is secured to a circular plate 34, (Fig. 2), secured in turn to the top face of the work supporting bed 10, (Fig. 1). As shown in Fig. 1, the top portion of the work support 33 is separated from its bottom portion by a space 35, so that the side faces of the counter portion of the lasted shoe may be positioned on the top of the work support with the side face to be cut or perforated exposed to view on the work support and with the side face, not to be cut until a subsequent operation, tucked out of the way in the space 35 beneath the overhanging edge of the top of the work support.

The left side of the top of the work support is beveled at 36, (Fig. 1), to thin down the left-hand side face of the work support top. The left-hand face 37, (Fig. 1), of the bottom of the work support is thicker than the right-hand face 38 thereof in order to provide for the reception of the lasted

shoe without weakening the work support as a resistance block to the blow of the die.

The top face of the work support, near its rear edge, is provided with two vertical pins 39 and 40 which enter openings 41 and 42 formed in a flat plate 43 having riveted thereto upstanding hardened-steel pins 44, the top surfaces of which act as striking surfaces for the cutting edges 26 of the overhead die 25. Thus, the plate 43 is removable readily, so that another plate carrying a different arrangement of striking surfaces may be substituted therefor.

As shown in Fig. 6, the inside face of the counter portion of the lasted shoe is concave, while the outer face to be perforated is convex. In order to support properly the concave face of the lasted shoe without danger of injury thereto, the forward series of the pins 44 have differential heights, so that the corners 45, 46, 47, 48 and 49, (Fig. 6), of the cutting edge striking surface on the pins 44 are located in an imaginary curved line following the concave curvature of the inside face of the lasted upper.

As shown in Fig. 6, also, the cutting edges 26 of the die 25 project differentially therefrom, so that the corners 50, 51, 52, 53 and 54, which cooperate, respectively, with the striking surfaces having the corners 45, 46, 47, 48 and 49, are located in an imaginary curved line following the convex curvature of the side face of the counter portion of the lasted upper to be perforated. It should be understood that the cutting edges of the die perforate the three layers of shoe upper material in a single cycle of the machine and that at the moment they pierce the shoe upper lining, the cutting edges contact the hardened-steel striking surfaces simultaneously.

The position of the lasted shoe on the corners 45, 46, 47, 48 and 49 may be gaged in any manner found desirable or expedient, in accordance with standard shoe practise. In the illustrated embodiment of the invention, the front edges of the top of the work support and the plate 43 are shaped to engage the heel seat of the sock lining, the left-hand corner edges of the top of the work support and the plate 43 being shaped to engage snugly the shoe upper lining at the back seam.

With this construction, the desirable relative movement between the cutting edges and the striking surfaces thereof in a direction normal thereto is maintained. The striking surfaces engage the concave surface of the lasted shoe upper at the counter portion thereof at a plurality of separated points, which means a portion of the concave surface bridges two of the adjacent points of support in an unsupported arch. But this plurality of unsupported arches, extending longitudinally along the concave surface of the lasted upper, is supported at the bases thereof sufficiently to resist successfully the tendency of the cutting pressure to break the shoe at any one of the unsupported points.

It should be understood that while, for convenience in disclosure, the illustrated embodiment of the present invention operates to perforate the right side face of a lasted shoe upper at the counter portion thereof, another machine, or other equipment for a single machine, is provided in order to cut and support the left side face of the lasted shoe at the counter portion thereof.

In practising my novel method, the shoe upper is lined, provided with a moulded counter, fitted, closed, lasted, bottomed, heeled, and completely finished in accordance with the present known

standards of shoe manufacture. It should be understood, however, that the counter may be assembled flatwise with the other component parts of the shoe upper and moulded during the shoe upper lasting operation. At some time subsequent to the lasting operation, at least one of the curved side faces of the lasted upper is perforated, cut-out or embossed, an operation heretofore considered impracticable by the shoe industry.

Nothing herein explained is to be interpreted as limiting the various features of the present invention in the scope of its application to use in connection with the particular shoe or the particular method of manufacturing it, or any combination thereof, selected for purposes of illustration and disclosure. While the particulars of construction herein set forth are well suited to one mechanical form of the invention and to the use to which it is put, it is not limited as to these uses, nor to these details of construction, nor to the conjoint use of all the features, either of con-

struction or method, nor is it to be understood that these particulars are essential, since they may be modified within the skill of the artisan without departing from the true scope of the actual invention, characterizing features of which are set forth in the following claim by the intentional use of generic terms and expressions inclusive of various modifications.

What is claimed as new, is:

10 That improvement in the art of making shoes which consists in assembling the various parts of a shoe upper, including the portion which is exposed to view in the finished shoe at the rear sides thereof, the lining and the counter interposed
15 therebetween, lasting the assembled shoe upper, and thereafter commencing and finishing the cutting of a plurality of separate ornamental cut-outs or perforations simultaneously through the said portion, its lining and the counter interposed therebetween.

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