

Nov. 25, 1930.

J. A. KELLY

1,782,759

ART OF MAKING SHOES

Filed April 7, 1925

2 Sheets-Sheet 1

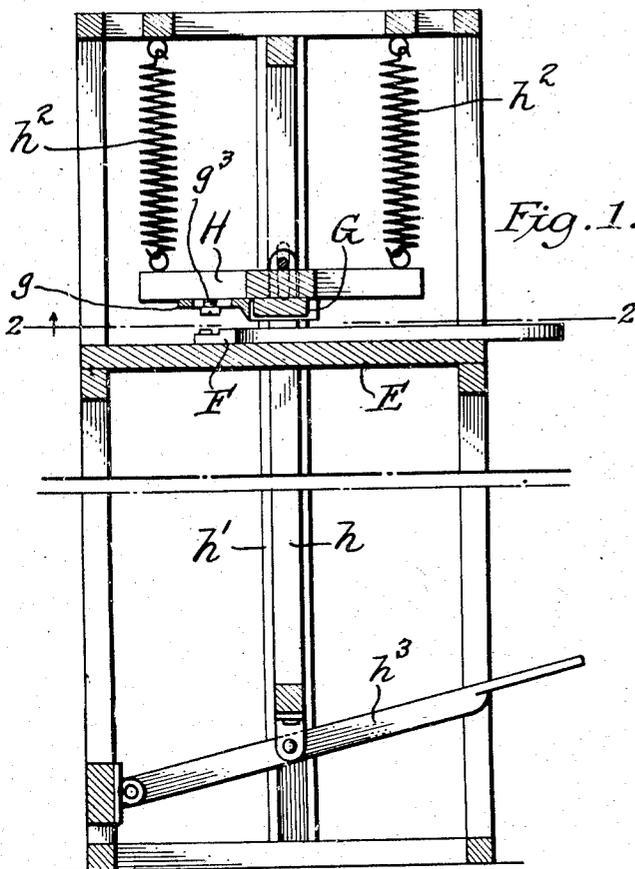


Fig. 1.

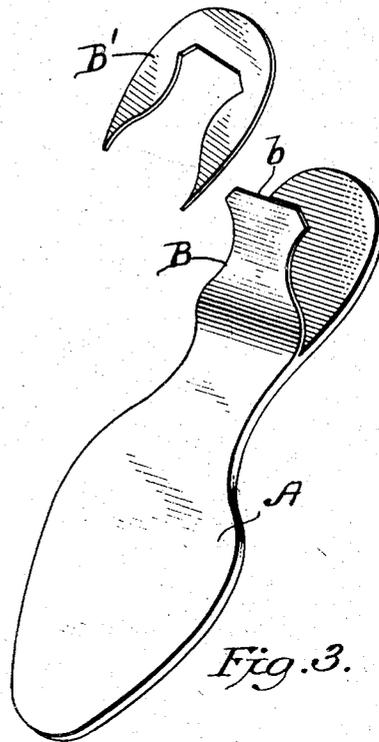


Fig. 3.

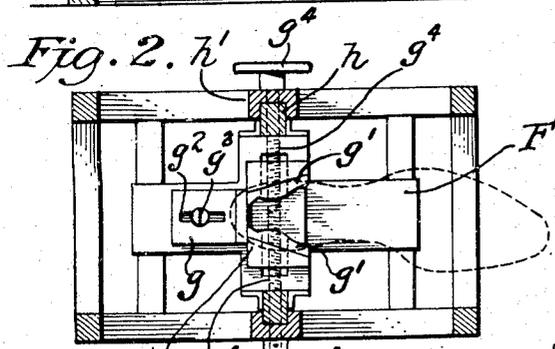


Fig. 2.

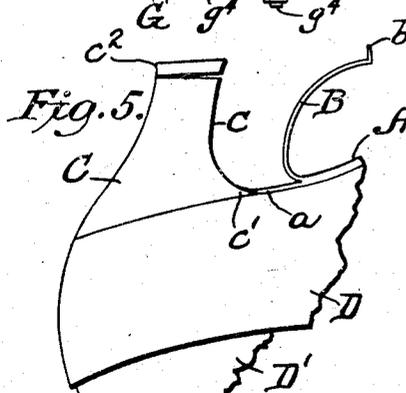


Fig. 5.

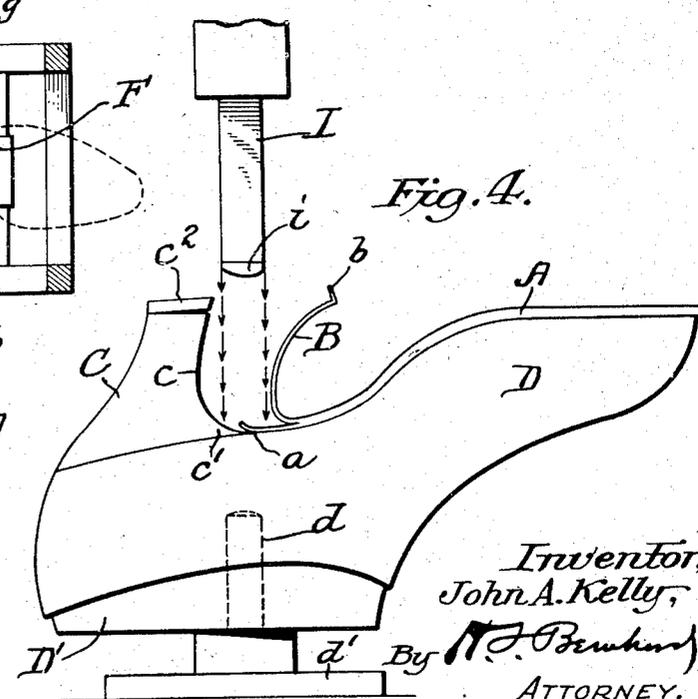


Fig. 4.

Inventor,  
John A. Kelly,  
By *N. J. Berkman*  
ATTORNEY.

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2 Sheets-Sheet 2

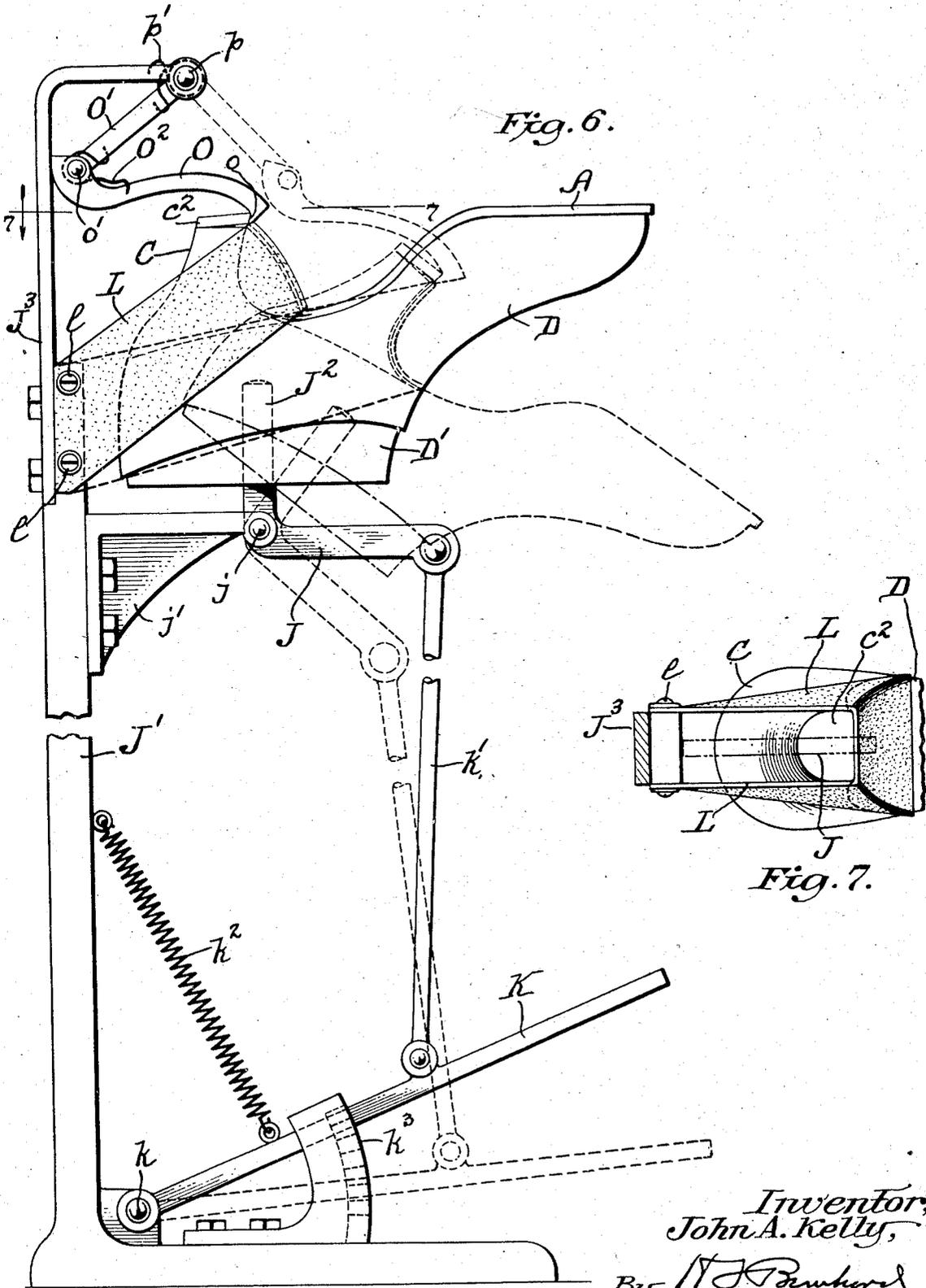


Fig. 6.

Fig. 7.

Inventor,  
John A. Kelly,  
By *N. J. Pemberton*  
ATTORNEY.

# UNITED STATES PATENT OFFICE

JOHN A. KELLY, OF BROOKLYN, NEW YORK, ASSIGNOR TO UNITED SHOE MACHINERY CORPORATION, OF PATERSON, NEW JERSEY, A CORPORATION OF NEW JERSEY

## ART OF MAKING SHOES

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This invention relates to improvements in the art of making shoes and as herein illustrated the improvements relate more particularly to the formation of heel breast covering flaps, to the application of such flaps to the breast faces of Louis heels, and to other finishing operations associated with the attachment of Louis heels to shoes.

It is customary to cover the breasts of Louis heels with thin flaps which are split from the outer or grain sides of the soles of the shoes to which the heels are attached. The sole splitting operation results in the formation of a flap which is integral with the sole and which has the same marginal contour as the heel end of the sole. After the sole has been attached to the shoe and a heel has been positioned on the heel seat of the shoe and secured in place by either temporary or permanent fastening means, the sole flap is coated with cement and laid against the heel breast, the flap covering the entire surface of the heel breast and the marginal portions of the flap projecting more or less beyond the opposite lateral edges of the breast. These projecting margins of the breast covering flap have subsequently to be trimmed off and heretofore this has usually been done by a hand operation requiring the exercise of a high degree of skill to finish the edges of the flap neatly and to avoid injury to the adjacent portions of the covering for the rear and sides of the heel.

One object of the present invention is to simplify and expedite the procedure connected with the covering of the breast faces of Louis heels and to this end the invention, in one aspect, consists in cutting into one side of the heel portion of a sole to a depth less than the thickness of the sole and to a desired configuration, and then splitting the heel portion of the sole crosswise of the depth cut to produce a flap integral with the sole. In this way the trimming of the flap after it has been attached is avoided thus effecting a considerable saving in time and expense as well as insuring against damage to the work and securing more nearly uniform results. As herein illustrated, a cutting die is employed to shape the margin

of the desired breast flap, the die being forced into one side of the heel portion of the sole before the flap is split from the sole and being arranged to cut into the sole to a predetermined depth less than the thickness of the sole.

In another aspect the invention is concerned with an improved method of attaching the shaped sole flap to the breast face of the heel. In accordance with this method, after the breast flap has been positioned upon the breast face of the heel with adhesive between the flap and the heel, the outer end portion of the flap is tucked in beneath the top lift of the heel, pressure is applied to the breast flap for the purpose of conforming it to the contour of said breast face and to hold the flap during the setting of the adhesive, and the tucked in outer end portion of the flap is held in place independently of the action of the means for applying pressure to the rest of the breast flap.

The invention will be explained with reference to the accompanying drawings, in which

Fig. 1 is a view, partially in elevation and partially in section, of mechanism which may be employed for cutting into the face of the sole to determine the marginal contour of the breast covering flap;

Fig. 2 is a sectional view taken along the line 2—2 of Fig. 1;

Fig. 3 is a perspective view of a sole as it appears after a breast covering flap has been formed integrally thereon as hereinafter described, this figure illustrating also the waste portion produced by the splitting and die cutting operations;

Fig. 4 is a view in side elevation illustrating the procedure for effecting a close union between the forwardly extending upper portion of the heel and a tongue which is formed on the sole beneath the breast covering flap for overlapping said portion of the heel;

Fig. 5 is a fragmentary view in side elevation showing a shoe with a heel positioned thereon prior to the attachment of the breast covering flap to the heel;

Fig. 6 is a view in side elevation of apparatus by means of which the breast covering flap is held under pressure against the breast

of the heel to effect the smooth attachment of the flap to the heel; and

Fig. 7 is a sectional view taken substantially along the lines 7—7 of Fig. 6, showing particularly the means for holding the breast flap in place against the heel breast.

Referring first to Fig. 3 of the drawings, there is shown an unattached sole A as it appears after it has been operated upon to form integrally with the sole at its heel end a flap B adapted to be attached adhesively to the breast face of a heel. A die-cutting operation determines the shape of the margin of the flap in accordance with the shape of the opposite lateral margins of the heel breast and a splitting operation separates the flap from the sole except at the base of the flap where it is attached to the sole. As shown, the opposite corners of the free end of the flap are cut off or beveled to facilitate the tucking of the flap beneath the top lift of the heel.

Mechanism suitable for performing the above-mentioned die-cutting operation is shown in Figs. 1 and 2 wherein E is a table upon which rests a container F of suitable character to receive and hold a sole in position to be acted upon by a die G which is mounted upon the lower side of a crosshead H. The crosshead H is provided with depending supports  $h$  fitted to slide in vertical guideways  $h'$  of an appropriate framework. A pair of springs  $h^2$  are arranged normally to hold the crosshead H raised and the die G in an inoperative position. The crosshead H is adapted to be moved downwardly, to cause the die to cut into the sole, by means of a foot treadle  $h^3$  which is fulcrumed on the framework and is pivotally connected with the slidable support  $h$ , suitable means being provided, as shown in Fig. 1, to limit the downward movement of the crosshead and die and thus to predetermine the depth of the cut made by the die in the sole.

The die-cutting operation may be performed by an ordinary die of the form and size required to cut a flap to correspond with the shape of the heel breast to which it is to be attached. In order, however, to provide for cutting flaps of various shapes and dimensions on different soles it is preferred to employ a sectional die such as that shown in Fig. 2, this die consisting of a member  $g$  for cutting the end of the flap, and a pair of side members  $g'$   $g'$  for forming the opposite lateral edges of the flap. The die member  $g$ , as shown, is provided with a slot  $g^2$  through which extends a binding screw  $g^3$  for rigidly but adjustably securing said member to the crosshead H. The side members  $g'$   $g'$  of the die are overlapped by the member  $g$  and are capable of being adjusted toward and from each other to vary the width of the flap. The means for effecting this adjustment of the die members  $g'$   $g'$  comprises a right and left threaded screw  $g^4$  which is mounted to turn

freely in bearings in the framework and is threaded into said die members. As shown, the members of the sectional die are assembled on the lower side of the crosshead H in co-operative relation with one another to provide a die which, upon depression of the crosshead, will penetrate a sole on the table E to a predetermined depth less than the thickness of the sole.

After the above-described die-cutting operation has been performed the cut portion of the sole is split lengthwise by any suitable means (not herein shown), this splitting operation cutting free a waste piece B' and leaving a relatively thin flap B integrally joined with the sole, which flap is of the required shape and size for covering the breast surface of a heel.

The heel breast covering flap having been thus formed and the upper of a shoe to which the sole is to be applied having been lasted, the sole is laid or positioned relatively to the upper and is attached in any well known manner. Fig. 4 shows a shoe upper D mounted on a last D' supported by a spindle or pin  $d$  on a stationary jack or support  $d'$ . After the sole has been attached to the shoe and the shoe has been supported in the above manner the heel seat portion of the sole is fitted in accordance with the usual practice to receive a wood heel and to provide an edge portion or supplementary flap  $a$ , beneath the breast covering flap B, which is adapted to overlap the tapering, forwardly extending portion at the top of the heel. In Figs. 4 and 5 a wooden Louis heel C is shown provided with a tapering, forwardly extending portion  $c'$  which is to be overlapped by the supplementary flap or tongue  $a$ . The heel is positioned on the heel seat of the shoe with the tapering portion  $c'$  of the heel overlapped by the tongue  $a$ , after which the heel is secured in place in any suitable manner.

After the heel has been secured to the shoe and before the sole flap has been laid against the heel breast, molding or shaping pressure is applied to the tongue or edge portion  $a$  for the purpose of compressing the tongue against the heel and to effect a close union between the tongue and the tapering forward edge portion  $c'$  of the heel. This pressure is applied by a member having a work engaging face shaped so as to compact and taper the tongue or bevel it at its periphery so that at its periphery it will be substantially flush with the heel breast and the curvature of the outer surface of the tongue will merge or blend gradually with the curvature of the heel breast. This molding or shaping of the tongue insures that after the breast flap has been laid there will be no undesirable bulge in the breast flap due to the presence of the tongue beneath it. As shown, a vertical movable plunger I is provided for applying the pressure to the tongue

*a*, the lower face *i* of the plunger being shaped to squeeze the periphery of the tongue against the heel, so as to bevel it to a thin edge, as shown in Fig. 5.

5 The last *E'* with the partially completed shoe thereon is then removed from the spindle *d* of the pressure applying mechanism and is transferred to mechanism such as that shown in Figs. 6 and 7, the function of which is to affix the flap B to the breast face of the heel.

10 The flap attaching mechanism shown in Figs. 6 and 7 includes the following elements: a shiftable last carrier J, a treadle K for imparting movement to the last carrier, and a flap-pressure member L.

15 The last carrier is shown as a bell crank or double armed member pivoted at *j* to a bracket *j'* of a framework *J'*, said last carrier being shown as having one of its arms formed as a spindle or pin *J<sup>2</sup>* adapted to enter the thimble hole of the last *D'*.

20 The treadle K is pivoted to the framework at *k*, and it is operatively connected with the last carrier by a link *k'*. This treadle is lifted by a spring *k<sup>2</sup>*, and is positioned for engagement with a rack *k<sup>3</sup>* by which the treadle may be locked in any one of a number of depressed positions.

25 The flap-pressure member L may be constructed in a variety of ways, but as herein shown it is in the form of an elastic loop L, composed of rubber, or other appropriate material, positioned above the bracket *j'* and in operative relation to the last *D'* for contact with the flap B so as to apply pressure to the flap and lay it smoothly in contact with the breast face *c* of the heel. The elastic loop L is fastened fixedly at its respective ends to an upstanding part *J<sup>3</sup>* of the framework in a suitable manner, bolts or screws *l* being shown for this purpose, and the loop extends in a forward direction from the framework so as to overhang the last carrier.

30 When the last, with the shoe thereon is removed from the pressure mechanism shown in Fig. 4, a suitable adhesive is applied to the breast face *c* of the heel, or to the under face of the flap B, or to both the heel and the flap, as may be desired. The last with the shoe is placed in the flap-pressure mechanism shown in Figs. 6 and 7 by fitting the last *D'* to the stem *J<sup>2</sup>* of the last carrier J, the treadle K being raised and the last carrier being in the full line position of Fig. 6. The flap B having been placed in contact with the breast face *c* of the heel, and the adhesive having been applied, the loop L is adjusted by hand by slipping it over and around the heel, see Figs. 6 and 7, and thereupon the operator presses the treadle downward and locks it by engagement with the rack *k<sup>3</sup>*. The treadle swings the last carrier to the forwardly and downwardly inclined position shown by dotted lines in Fig. 6, and this shift in the posi-

tion of the last and the shoe pulls on the elastic loop L and thus places tension on said loop, whereby pressure is applied by the loop to the flap B, the effect of which is to press the flap into contact with the breast face of the heel and to lay the flap smoothly on said heel breast. The loop conforms to the surface of the heel breast and when distended or extended the loop applies pressure uniformly to the flap B and over the face or breast *c* of the heel. The last and the shoe remain in place on the last carrier for a sufficient length of time for the adhesive to become set and in this period of time the last carrier J is locked in its service position and the loop L is distended for applying pressure to the flap B for holding the latter in contact firmly with the heel breast. At this time, the operator may devote his attention to assembling or removing other lasts with their shoe components in the machine or machines, but when sufficient time has elapsed for the flap B to become adhesively attached in a firm relation to the heel, then the treadle *k* should be released and the last carrier returned to the out of service position for relaxing the tension of the loop L, and thereupon the loop is shifted away from the heel and the last *D'* dismounted from the spindle of the last carrier J.

35 In some instances it may be desired to tuck in the free edge *b* of the sole flap beneath the top lift *c<sup>2</sup>* of the heel, and in Fig. 6 the mechanism is shown as having a flap tucker O, the same comprising an arm provided with a lip *o* adapted for engagement with said free portion of the flap and to press or force the said edge between the heel C and its top lift *c<sup>2</sup>*. The tucker arm O is pivoted to a second arm *O'* by a pin or bolt *o'* and is under the control of a spring *O<sup>2</sup>*, whereas the second arm *O'* is pivoted by a pin or bolt *p* to upstanding member *J<sup>2</sup>* of the framework. The second pivoted arm *O'* is controlled by a spring *p'*, and the pivoted arms O *O'* are thus free to swing forwardly with the last and the shoe when said last and shoe are shifted into the service positions shown by dotted lines in Fig. 6. The swinging tucker device conforms to or follows the movement of the shiftable last carrier exerting a progressively increasing pressure upon the end portion of the breast flap engaged by it and thus restraining said portion of the breast flap from any tendency to be displaced by the action of the elastic loop L as the last is swung to tighten the loop. When said last carrier is returned to an out of service position, the springs *O<sup>2</sup>* and *p'* act on the arms O *O'* to bring the tucker into position for service on the next shoe placed on the last carrier. The tucker is semi-automatic in operation by conforming to the shift in position of the last carrier and the last thereon, but in practice the operator should manipulate the

- tucker *O* so that the lip *o* thereof will press the free end *b* of the flap into place between the heel and its top lift *c*<sup>2</sup>, the latter being displaceable relatively to the heel for the introduction of the flap edge. The lift *c*<sup>2</sup> is subsequently attached firmly and solidly to the heel in the operations of finishing the shoe.
- Having described my invention, what I claim as new and desire to secure by Letters Patent of the United States is:
1. That improvement in the art of making shoes which consists in cutting into one side of the heel portion of a sole to a depth less than the thickness of the sole and to a desired configuration, and then splitting the heel portion of the sole crosswise of the depth cut to produce a flap integral with the sole.
  2. That improvement in the art of making shoes which consists in die-cutting a heel breast-shaped outline in one side of the heel portion of a sole, and then splitting the heel portion of the sole edgewise to form a breast covering flap integral with the sole.
  3. That improvement in the art of making shoes which consists in forming a heel breast covering flap initially with its opposite lateral edges shaped to correspond with the opposite lateral edges of the breast of a heel to which the flap is to be applied and with a portion at the free extremity of the flap adapted to be tucked beneath the top lift of the heel, said portion having its opposite corners beveled.
  4. That improvement in methods of covering the breasts of Louis heels which consists in positioning a breast covering flap upon the breast of a heel with adhesive between the flap and the heel, tucking the outer end portion of the flap beneath the top lift of the heel, applying pressure to the exposed surface of the flap to conform the flap to the contour of the breast face of the heel and to hold it in place during the setting of the adhesive, and holding the tucked in outer end portion of the flap in place independently of the action of the pressure applying means.
  5. That improvement in the art of making shoes which consists in assembling a sole, provided with an integral breast flap, into position with respect to an upper of a shoe, securing a heel in place upon the heel seat of the shoe, adhesively attaching the breast flap to the breast face of the heel, tucking the free end of the breast flap beneath the top lift of the heel, placing a pressure member in contact with the exposed surface of the breast flap, shifting the assembled shoe components relatively to the pressure member for placing tension on said member to apply pressure to the breast flap, and restraining the tucked in end of the breast flap against any tendency of said shifting movement to displace it.
  6. In the art of making shoes, the process which consists in assembling a sole provided with a heel breast flap in position with respect to a lasted upper, assembling a heel in position relatively to the upper and the sole, applying the breast flap to the breast face of the heel, and tucking the free edge of the breast flap between the heel and the top lift thereof.
  7. That improvement in the art of making shoes which consists in lasting an upper, laying a sole provided with an integral heel breast covering flap, shaping the heel end of the sole to form a seat for a heel, securing a heel to the heel seat of the shoe, adhesively attaching the breast flap to the breast face of the heel, placing an elastic loop in contact with the breast flap, shifting the shoe with the attached heel and sole relatively to the loop and distending the latter to apply pressure to the breast flap, holding the outer end portion of the breast flap in place independently of the action of the elastic loop, and thereafter displacing the elastic loop from contact with said breast flap.
- In testimony whereof I have hereto signed my name this 2nd day of April, 1925.
- JOHN A. KELLY.