July 4, 1939. F. MACCARONE 2,164,754

METHOD OF SHOEMAKING

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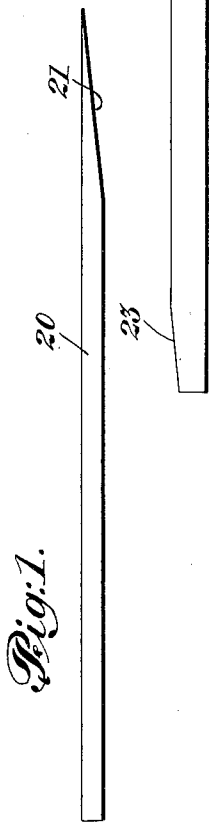



Fig. 1.

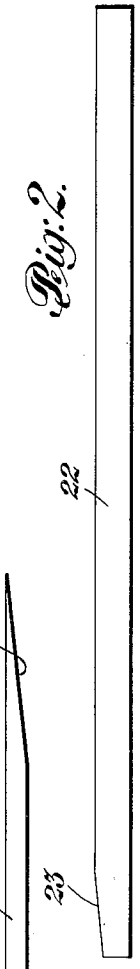



Fig. 2.

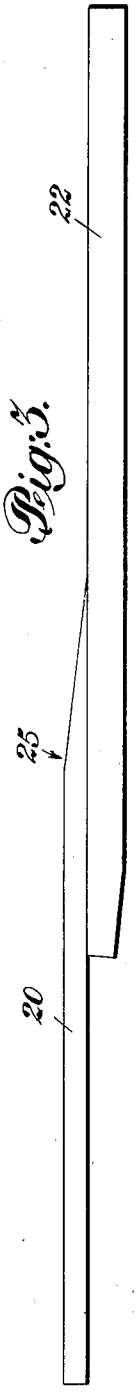



Fig. 3.

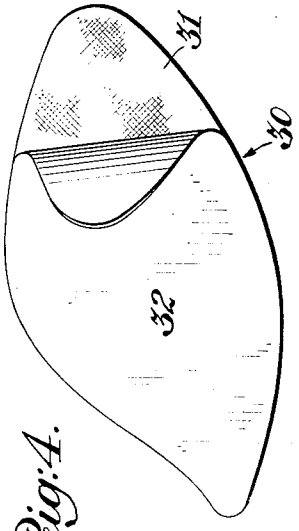



Fig. 4.

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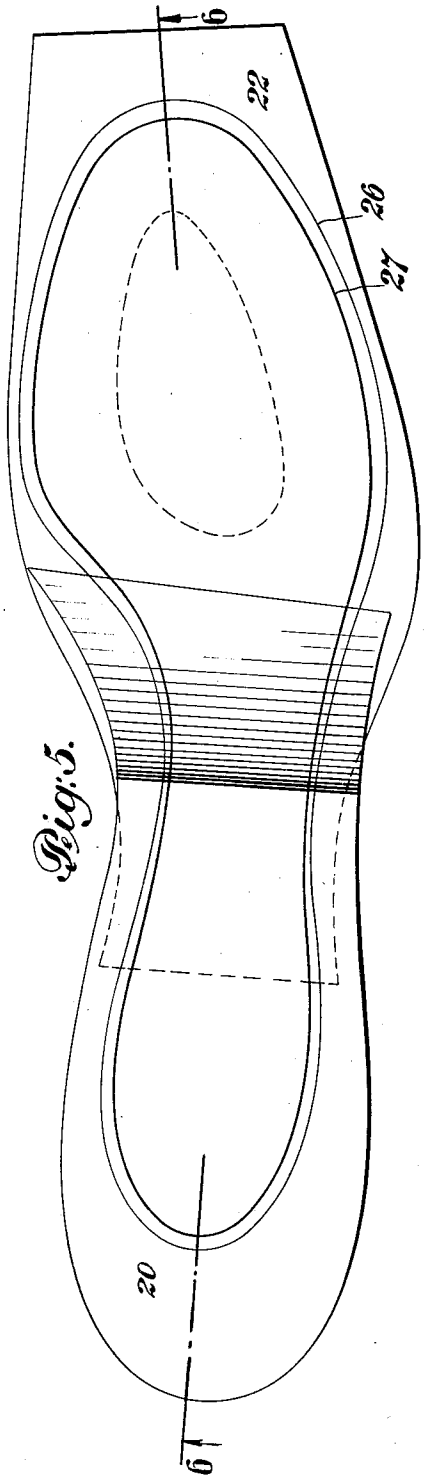



Fig. 5.

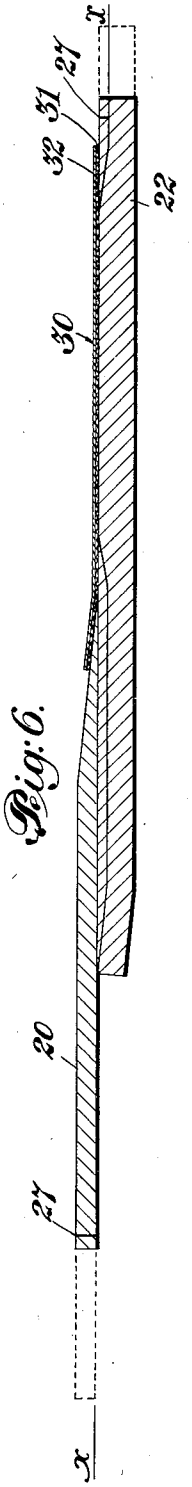



Fig. 6.

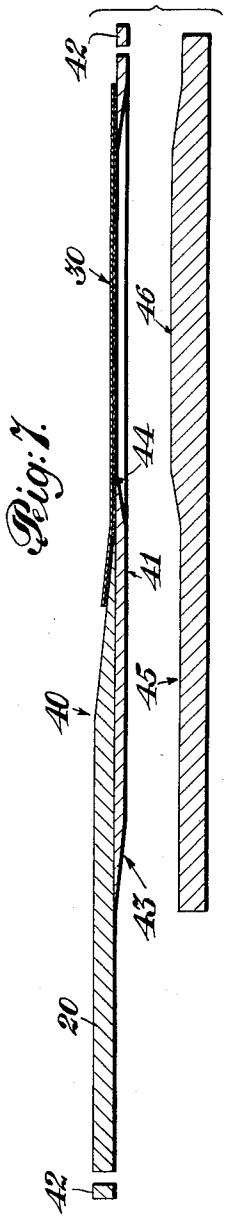



Fig. 7.

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Fig:8.

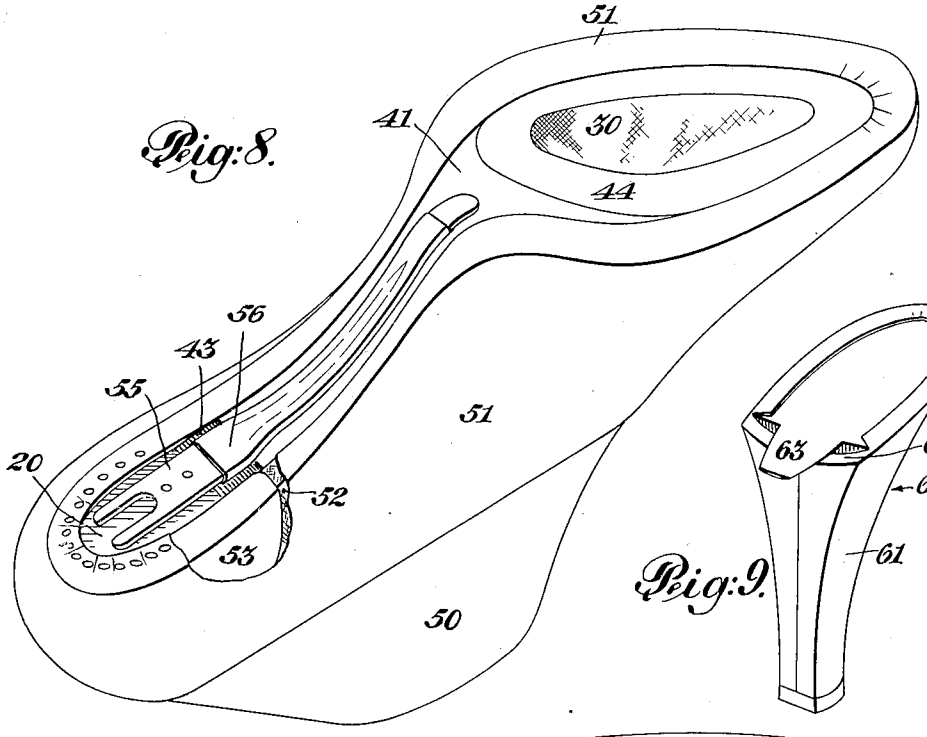
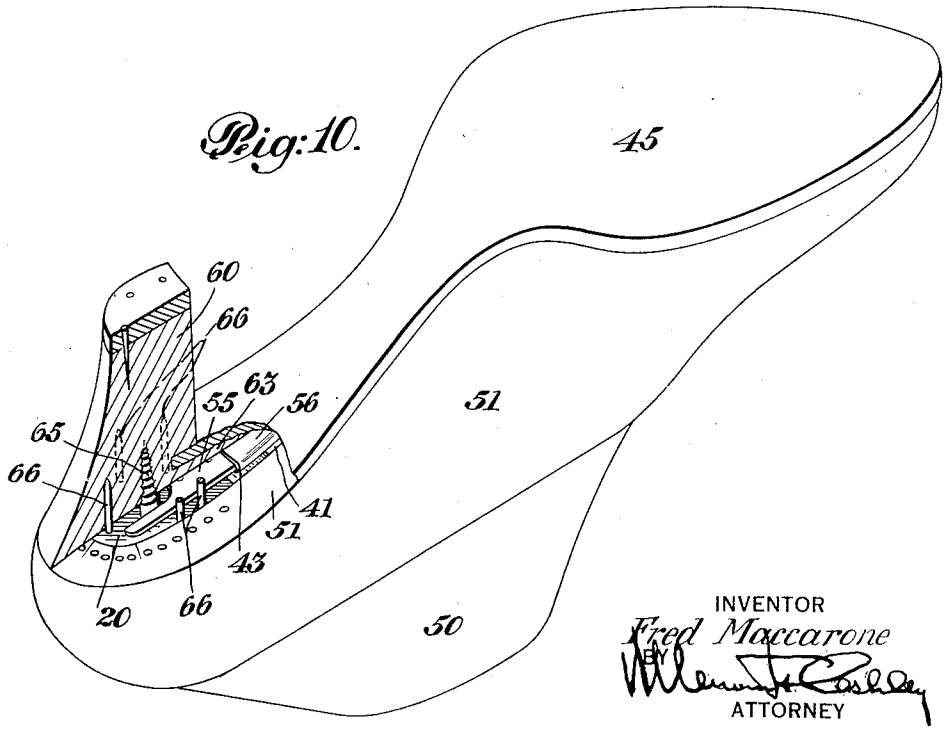



Fig:9.




Fig:10.




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Fig. 12

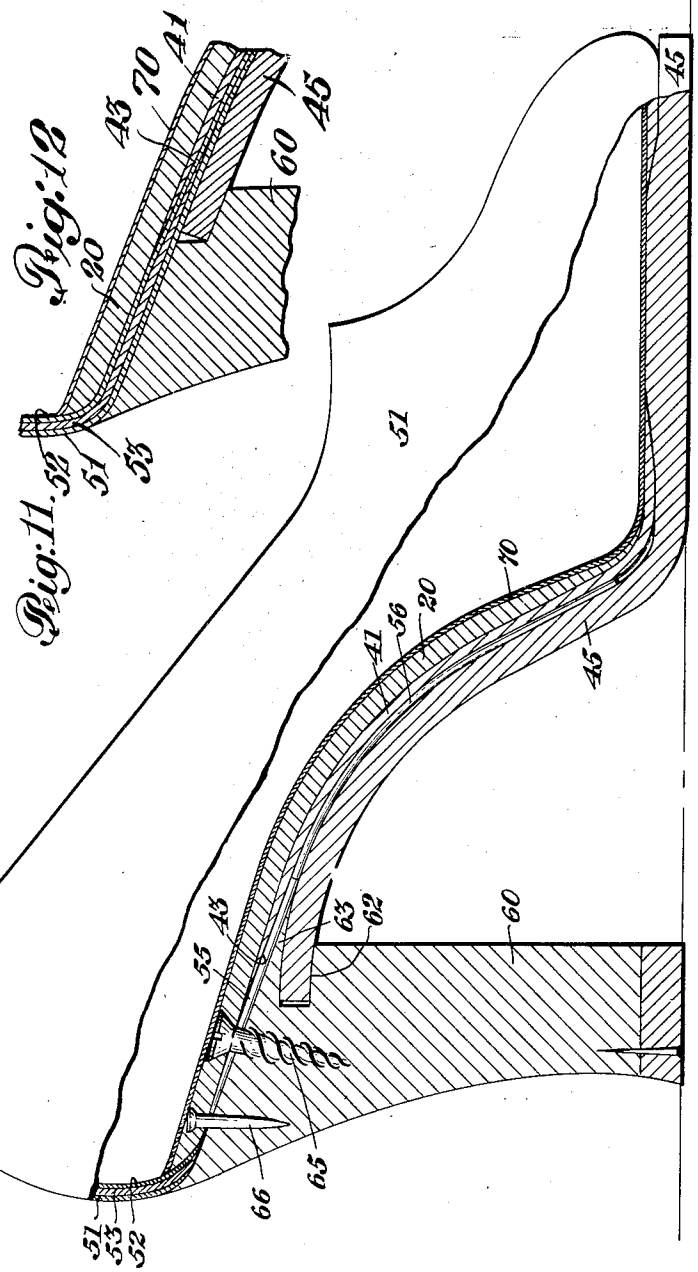



Fig. 11

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# UNITED STATES PATENT OFFICE

2,164,754

## METHOD OF SHOEMAKING

Fred Maccarone, Brooklyn, N. Y.

Application June 3, 1937, Serial No. 146,164

6 Claims. (Cl. 12—146)

This invention relates to shoes which embody skeleton insoles and complemental outsoles formed from common blanks, and to the methods employed in making shoes of this character.

Heretofore, it has been the common practice to divide a full blank of sole leather into complemental insole and outsole parts, each having an integral heel, shank, and ball portion, the division being accomplished in a splitting machine with the central area of the ball portion of the blank held out of the plane of the blade of the machine by a die or template. In order to produce properly weighted sole members for the shoes, it is necessary to employ leather sole blanks of substantial thickness and as such heavy sole blanks are disproportionately more expensive than the lighter weights, large scale manufacturers supplying the low priced volume trade cannot afford to practice these improved shoemaking methods and the superior flexibility and wearing qualities of substantial single soled shoes of this type have not been made as widely available to the public as they might be if the shoes could be produced at less cost for sole stock.

Also, to maintain a maximum thickness of stock in the outsole, the split-off skeleton insoles have been made very thin. While this is an advantage contributing to flexibility in the forepart of the shoe, the corresponding thinness of the insole through the shank and at the heel seat has generally required that the insole be reinforced by a separate shank piece in order to provide the rigidity necessary for proper balance and strength in the shoe and to insulate the foot of the wearer from the usual steel shank reinforcement.

It is a principal object of my present invention, therefore, to provide an improved shoe of this character which may be produced at less cost, the sole members comprising an outsole of substantial thickness and a skeleton insole having lightness and flexibility in the forepart but having a comparatively stiff and heavy shank portion.

Another object is to provide an improved method of making my new shoe in which the advantages of the prior methods above referred to are maintained and other and additional advantages are realized, all as will be pointed out more particularly in the following specification.

In dividing common blanks in splitting machines to form light skeletonized insoles and complemental outsoles, I have found that the action of the rolls of the machine tend to stretch and warp the light insole formed from the more spongy flesh side of the blank, with the result that the divided portions of the blank do not exactly complement each other. It is therefore a further object of my present invention to provide an improved method whereby the forepart insole portions of the common blanks are reinforced during the splitting operations and to provide improved means for this purpose, said means also serving to reinforce the forepart of the insole during the subsequent lasting operations. Other and further objects will appear from the following detailed specification.

Referring to the drawings which form a part of this specification:

Figure 1 is a side edge elevation of a shank and heel piece, and

Figure 2 is a similar view of a short, thick sole blank of grain leather prepared in accordance with my invention.

Figure 3 is a side edge elevation showing a full composite sole blank formed by joining the shank piece and the sole blank in overlapping relation.

Figure 4 is a plan view of my improved means for reinforcing the insole portion of the sole during the splitting and shoemaking operations.

Figure 5 is a plan view of the composite blank shown in Figure 3, the outlines of the sole members to be formed therefrom being indicated.

Figure 6 is a longitudinal section taken on line 6—6 of Figure 5 and shows the composite blank full rounded and substantially as it appears before it is divided into insole and outsole parts, the insole portion of the blank being reinforced by the means illustrated in Figure 4.

Figure 7 is a view similar to Figure 6 showing the insole and outsole portions of the blank divided.

Figure 8 is a perspective view of my improved shoe as it appears on a last before attachment of the outsole and the heel.

Figure 9 is a perspective view of a covered wood heel of a known type well suited for shoes of my improved construction.

Figure 10 is a view similar to Figure 8 illustrating the lasted shoe with outsole and heel attached, the heel portion of the shoe being shown partly in section to disclose the neat fitting relationship of the parts.

Figure 11 is a longitudinal section of the completed shoe, and

Figure 12 is a detail sectional view similar to Fig. 11 taken through the margin of the shoe at the counter portion to clearly disclose the relationship of the lasting margin of the upper to the sole members.

In carrying out my invention I provide a sub-

stantial shank piece 20 which may be of stiff inexpensive leather, leatherboard, fibre or like material, the forward end portion being skived or beveled on the underside to a feather edge at 21. I also provide a short grain leather sole blank 22 of substantial thickness which is beveled adjacent its rearward end at 23 on the flesh side. For reasons which will become more apparent hereafter when the splitting operation is discussed, the bevel at 23 extends to a depth approximately equal to the thickness of the forepart margins of the insole.

The forward portion of the shank piece is then firmly secured by adhesive over the rearward portion of the sole on the flesh side thereof to form a composite sole blank 25, as shown in Figure 3, the parts overlapping endwise to obtain a double thickness of material throughout the entire intermediate portion of the composite blank for a distance corresponding to the length of the shank portion of the shoe and said double thickness being gradually reduced through a section adjacent the forward end of the shank piece, by reason of the taper formed on the shank piece at 21, and through a section adjacent the rearward end of the sole 22, by reason of the bevel at 23.

The grain leather sole blank is of a length amply sufficient for the shank and forepart portions of the shoe but does not include material for the heel area, thereby saving the cost of sole leather at the heel. This saving is a substantial one whereas the cost of the shank piece is little more than that of the usual shank piece ordinarily incorporated in shoes of this type.

The composite blank is then rounded to size and shape as indicated by the line at 26 in Figure 5, the rounding being effected in relation to the double thickness of the blank so that such double thickness will occur through the shank portion of the rounded sole. A perpendicular marginal cut or incision 27 extending to the depth of the desired insole may also be made to define and initially form the insole, and this cut may be made during the rounding operation in accordance with the principles taught in my U. S. Patent Nos. 2,012,913 and 2,012,915 of August 27, 1935.

Before dividing the composite blank and either before or after it is rounded, I prefer to reinforce the exposed flesh surface of the sole leather part 22, that is to say the forepart of the insole portion of the blank, by an adhesively applied patch 30 comprising a thin layer of gum impregnated fabric 31 and a layer of tough thin paper 32, the laminated layers being shaped to substantially cover the central forepart area of the blank but leaving exposed a sufficient margin to receive the upper parts of the shoe to be lasted to the insole. No glue or adhesive other than the gum carried by the fabric 31 is required for attachment of the patch, so that it may be readily stripped off subsequently without impairing the surface of the sole, and the patch may be reused an indeterminate number of times.

The rounded composite blank, thus reinforced, is then divided along the line $x$—$x$ of Figure 6 into a composite skeleton insole 40 and a short unitary outsole 45, as shown in Figure 7. The division is preferably effected in a splitting machine by passing the blank therethrough in contact with a die which holds the central forepart portion of the blank out of the plane of the blade of the machine. During this operation the patch 30 reinforces the forepart of the insole portion of the blank and prevents the split-off insole from becoming stretched or warped by the action of the rolls of the machine or by the die. Machines as at present equipped may be employed since the splitting about the forepart margins and through the shank portion is effected in planes parallel to the grain surface of the short leather sole 22, and it has been found that no special care is necessary to preserve the patch 30, the gummed fabric surface of which resists incision by the blade of the machine. Since the incision 27 extends to the splitting plane, the margins of the insole 40 are trimmed to proper insole size and shape in the course of the splitting operation, a chip 42 falling away as scrap.

As shown, the insole 40 comprises the shank piece 20 and a piece 41 split from the flesh side of the short leather sole 22, said pieces overlapping throughout the entire shank portion. Inasmuch as the short sole 22 was reduced at its rearward end by the bevel 23, and since the splitting takes place through the shank in a plane parallel to the grain surface of the sole, the rearward end of the split-off portion of the insole is likewise beveled, forming a sloping shoulder at 43 on the lower surface of the composite insole. The forepart of the insole has a central opening extending over areas underlying the patch 30, the margins of the opening being skived or beveled on a long angle and to a feather edge at 44.

The outsole 45, comprising the grain side of the leather sole 22, is of substantial weight and is reduced about the forepart margins and rearwardly by the removal of the piece 41 of the insole, the split surfaces being counterparts as will be readily understood, and the central forepart of the outsole retains the full thickness of the original leather sole blank, forming an island-like projection 46 exactly complemental to the insole opening.

Formed and reinforced as above described, the insole may be channeled, if the lasting method to be employed so requires, and is then temporarily secured to a last 50. An upper 51, including a lining 52 and a counter 53, is pulled over the last and secured to the margins of the insole by cementing or other means in any of the ways which may be suitable. In this connection it is desired to point out that the outwardly facing margin of the lasted insole forwardly of the heel presents a uniform split leather surface well calculated to support a channel and/or to obtain a proper adhesive bond with the lasting margin of the upper parts. During lasting the patch 30 continues to reinforce the insole forepart, holding the light rand-like margin in position against the strains of the lasting operations.

The reduced thickness of the composite insole at the heel portion amply compensates for the additional thickness of the marginal parts of the upper occasioned by the counter 53, and the sloping shoulder 43 on the insole subtends at an angle substantially corresponding to the bevel of the skived margins ordinarily found on counters, so that the upper parts lie smoothly over the insole. Intermediate the overlasted edges of the upper parts, the broad, bifurcated end portion of a steel shank stiffener 55 is positioned to fill the major part of the balance of the reduced insole portion at the heel. The steel stiffener is of standard construction and is crowned and covered with tape 56 at the shank portion of the shoe.

The short outsole 45 is then laid and attached, by cement or other means, the island-like projection registering with the opening in the forepart of the insole, whereafter a heel is attached to the

shoe and any necessary finishing operations are performed.

The heel illustrated is of a novel construction forming no part of this invention. It is made preferably of wood covered with fabric **61** and has an arcuate groove formed therein adjacent its seat at **62** on the breast side for receiving the rear end of the outsole, the upper wall of the groove being defined by an integral tongue **63** which projects toward the shank of the shoe between the sole members, thus interlocking the breast portion of the heel with the outsole and obtaining a very sturdy construction.

Except for the interlocking of the outsole in the heel groove **62**, the heel is attached in a manner usual in attaching wood heels, initial attachment being by cement and thereafter a screw **65** is extended through the insole and the bifurcate portion of the shank stiffener into the heel, nails **66—66** etc. also being used as a common auxiliary means of securement.

After removal of the last, the patch **30** may be removed from the inside of the shoe and a sock lining **70** is ordinarily inserted. The finished shoe, made as above described, will be found to possess a highly flexible forepart having a substantial single wearing thickness of sole leather at the central area, the easy walking qualities of the shoe being enhanced by the extremely sturdy shank construction.

I claim:

1. In shoemaking, providing a short blank of sole leather having only shank and forepart portions and securing a unitary shank and heel piece to the flesh side thereof to form a full composite blank having double thickness through the shank portion, adhesively attaching a reinforcing patch over the central ball area of the blank on the flesh side thereof, and splitting the blank through the sole leather portion thereof to divide it into a full composite insole having a skeletonized ball portion reinforced by said patch and a short complemental outsole of grain leather.

2. In shoemaking, providing a short blank of sole leather having flesh and grain sides and securing a layer of other material to the flesh side thereof in endwise overlapping relation to form a composite sole blank, rounding the composite blank in relation to the overlapping portions thereof to provide a full rounded sole having a shank portion of double thickness, adhesively attaching a reinforcing patch over the central ball area of the sole on the flesh side thereof, and splitting the sole through the sole leather portion thereof to divide it into a full composite insole having a skeletonized ball portion reinforced by said patch and a short complemental outsole of grain leather.

3. In shoemaking methods wherein a sole blank is split to provide a skeleton insole and a complemental outsole and a reinforcing patch is applied over the skeletonized area of the insole during the lasting operations, that improvement which consists in applying the patch before the blank is split to reinforce the insole portion thereof during the splitting operation.

4. In shoemaking, providing a short blank of sole leather having only shank and forepart portions, and securing a unitary shank and heel piece of relatively stiff material to the flesh side of the sole blank to form a full composite blank having double thickness through the shank portion, splitting the blank through the sole leather portion thereof to divide it into a full composite insole skeletonized at the ball portion and a short complemental outsole of grain leather, the splitting through the shank portion of the blank being such as to form a transverse sloping shoulder on the insole at the juncture of the heel and shank portions thereof, said shoulder defining a heel portion of reduced thickness relative to the shank portion.

5. In shoemaking, providing a short blank of sole leather having only shank and forepart portions, the rearward end margin of the blank being beveled on the flesh side, and securing a unitary shank and heel piece of relatively stiff material to the flesh side of the sole blank to form a full composite blank having double thickness through the shank portion, splitting the blank through the sole leather portion thereof to divide it into a full composite insole skeletonized at the ball portion and a short complemental outsole of grain leather, the splitting through the shank portion of the blank being in a plane spaced from the grain side of the sole leather portion thereof a distance equal to the thickness of the sole leather portion at its beveled rear edge, thereby forming a transverse sloping shoulder on the insole at the juncture of the heel and shank portions thereof, said shoulder defining a heel portion of reduced thickness relative to the shank portion.

6. In the art of shoemaking as recited in claim 4, the additional step of adhesively attaching a detachable reenforcing patch to that part of said blank which forms the forepart portion of said insole.

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