This invention is a process of making shoes, one object in view being the production of a flexible sole shoe by a procedure characterized by relatively few and simple operations to the end that the flexible sole shoe may be economically produced. A further object is the production of a wet proof shoe the wet proof material in which is positioned next the outsole so that it does not contact with the wearer's foot.

In the art of making shoes of a certain type, generally known as Mackay sewed shoes, the procedure involves the union of an insole and outsole with the upper in such manner that said soles are so firmly related as to produce no considerable friction between the contacting surfaces, and when the shoe is worn, the bending of the sole results in an undesirable squeaking sound due to the frictional contact.

According to this invention, I employ a cut out insole, i.e., an insole with an integral shank piece and the forepart of which is removed except at the margin thereof, the result of which is that the insole is characterized by a marginal stay member unitary with the shank piece.

In one mode of procedure, the cut out insole is imposed upon a last and temporarily attached thereto, as by the usual tacks. The upper is now lasted so as to draw the margins of the upper into lapping relation to the margins of the cut out portion and the shank of the insole, suitable temporary tacks being used for holding the upper, and the marginal portion of which upper is permanently secured to the marginal cut out portion and to the shank of said insole by tacks, staples or other permanent metallic fasteners which are clenched against the metal face of the last. The upper having become set, the temporary tacks are withdrawn, and then the outsole is imposed upon the upper, after which the outsole is united by stitching said outsole for the seam to pass through the outsole, the upper and the marginal cut out portion of the insole.

In another form of the invention, the insole with the cut out forepart and the shank as heretofore described is used in connection with a layer of wet proof material, the same being positioned over the cut out insole and with the coated face of said wet proof layer next to the outsole. The insole and the wet proof layer having been imposed upon the last, the upper is lasted, and the margins of said upper being fastened by temporary lasting tacks and by permanent metallic fasteners, after which the outsole is imposed upon the lasted upper margin and upon the wet proof layer, and then the outsole is stitched for the seam to pass through the upper margin, the wet proof layer and the marginal portion of the insole.

The shoe produced according to my invention is characterized by an insole the forepart of which is skeletonized so as to employ a continuous marginal member affording the required material for the attachment of the upper and the outsole, but devoid of any material within the marginal member, as a result of which the insole at the forepart thereof cannot have such frictional contact with the outsole as to result in the undesirable noise when wearing the shoe.

In the drawings:
- Figure 1 is a plan view of the cut out insole tacked upon a last.
- Figure 2 is a plan view of the last, insole and upper with the upper lasted and fastened to the insole.
- Figure 3 is a cross section on the line 3-3 of Figure 2.
- Figure 4 is a cross section showing the outsole stitched to the upper and insole.
- Figure 5 is a plan view showing a wetproof layer assembled in superposed relation to the last, said view being broken away and illustrating the upper partially last over the wetproof layer.
- Figure 6 is a cross section on the line 6-6 of Figure 5, and
- Figure 7 is an enlarged cross section with the outsole stitched to the wetproof layer and to a portion of the insole.

In carrying my invention into practice, I first produce an insole A the forepart of which is cut out or skeletonized at a so as to result in a marginal member B unitary with a shank piece C. The insole is composed of material suitable for the purpose, such as leather, or in some cases I may use a fabric, and said insole is cut by a die or otherwise to remove the material from the forepart, as will be understood.

Said insole is imposed upon an iron faced last D, to which it is temporarily attached in a suitable manner as by lasting.
tacks which are driven through appropriate holes in the metal facing of said last. An upper E is lasted as usual, by drawing it tightly around the last so as to conform thereto and for the marginal portions of said upper to occupy an overlapping relation to the marginal member B of the insole, temporary lasting tacks e being used to retain the upper in position. The marginal portion of the lasted upper may be attached to the shank and the marginal member of the insole by permanent metallic fasteners such as staples, but it is preferred to use tacks f the pointed ends of which are clenched against the metal face of the last as seen in Figs. 3 and 4.

The upper having been conformed to the last, the temporary tacks are pulled out, and the upper is now in condition for the attachment of the outsole F, the same being imposed upon the lasted margin of the upper and to some extent upon the insole, as at the shank thereof. The outsole is stitched to the upper and the insole, the seam g passing through the outsole and the insole at the marginal member B and the Shank C of said insole, whereby the skeletonized insole affords the material for the secure attachment of the upper and the outsole while at the same time the insole is cut out in the forepart thereof so as to impart the desired flexibility to the shoe and to eliminate that frictional contact between the faces of the insole and the outsole which has been the occasion for the undesirable squeaking noise.

It is desirable in this art to produce a waterproof shoe, and in my invention as shown in Figures 5, 6 and 7, this end is secured in a flexible shoe of the MacKay sewed type. In addition to the insole, upper and outsole there is employed a layer of wet proof material G, the same comprising a piece of fabric with a waf er resisting coating h on one face thereof. Said layer G is of such dimensions and size as to correspond to the insole, and in making the shoe, the cut out insole A and the wet proof layer G are assembled in superposed relation upon the last, to which the two pieces A G are attached by the temporary tacks, as described. The upper is lasted to conform to the last and for the margins of said upper to overlap the waterproof layer and the insole at the shank and the marginal member thereof, temporary tacks being used to retain the upper, and the permanent fastenings, such as staples or tacks, being utilized for the permanent attachment of the upper to the insole and the waterproof layer.

Prior to assembling the outsole, the lasting tacks are withdrawn, and the outsole is then imposed upon the waterproof layer and the lasted margin of the upper, the moisture proof coating of the layer G being next to or in contact with the outsole. Said outsole is stitched to the shoe, the seam passing through the outsole, the waterproof layer, and the insole, the seam extending along the shank and the marginal member of said insole.

It is preferred to use in connection with the skeletonized part of the insole a continuous layer of material, preferably a layer of waterproof fabric, and to unite said layer of material to the skeletonized insole, by cementing the insole and the additional layer one to the other. The association of the fabric with the skeletonized insole performs several functions, among which are the retention of the skeletonized insole in proper position relatively to the last and to the upper during the lasting operation, increased facility in handling the composite element comprising the insole and fabric, and the preservation of the thin skeletonized material of the insole in a non-wrinkling condition during the operation of lasting the upper and in the service and wear of the shoe. The marginal member B of the insole is thus adapted to be united throughout its width to the layer of fabric so that the edge portions of the marginal member are retained in a desired relation to the fabric and thus precluded from buckling or warping, the said marginal part of the insole being fastened and sewed to the outsole by two lines of permanent fastenings, one of which lines of fasteners is afforded by the row of metallic fasteners f, and the other the line of stitches formed by the seam g. In like manner, the relatively flexible layer of fabric is retained in a smooth non-wrinkled condition within the shoe, the same being practically stretched across the insole and united therewith, and the marginal portions of said layer being united with the upper and insole by the row of metallic fasteners f and united also with the upper and the insole to the outsole of the seam g.

The layer of fabric and the material comprising the insole thus mutually reinforce each other so as to be retained in a smooth, level condition within the shoe, and said layers afford the desired thickness and stability of materials for the attachment of the upper and for the security of attachment of the outsole, the parts comprising the upper, the insole and the layer of material remaining intact when the outsole is ripped off for the purpose of repairs. By the construction described, I am able to produce a MacKay sewed shoe of a flexible nature, and the use of a waterproof layer, as G, affords the added function of a dry shoe to the foot, the same being quite desirable, particularly as the addition of the waterproof fabric is attended by
a very small increase in the cost of producing the shoe.

Having thus fully described the invention, what I claim as new and desire to secure by Letters Patent is:

1. In the art of making shoes, the process which consists in removing from the forepart of an insole all the material to produce an opening bounded by a narrow marginal member which is unitary with the insole shank, assembling a thin continuous layer of wet-proof material into contact with said insole and across the opening therein and into lapping relation to the marginal member, adhesively attaching the wet-proof layer to the marginal member of the insole and thus uniting the insole and the wet-proof layer to produce a composite flexible member, imposing the composite member on a last, lasting an upper and attaching the same to the composite member, imposing an outsole on the last mentioned layer of the upper, and attaching the outsole to the upper and the composite member.

2. In the art of making shoes, the process which consists in producing an insole provided with a shank, the forepart of said insole removed to result in a marginal member only unitary with said shank, assembling a layer of wet-proof material in superposed relation to the cut out insole, imposing the assembled insole and said wet-proof layer upon a last, lasting an upper and temporarily fastening the same to the insole and to the wet-proof layer by temporary lasting tacks, securing the upper to the insole and the wet-proof layer of material by permanent metallic fasteners which are clenched against the last, removing the temporary lasting tacks, imposing an outsole upon the last mentioned layer of the upper and the wet-proof layer, and stitching the outsole for the seam to unite said outsole to the wet-proof layer and the insole independently of the permanent attachment of said insole and wet-proof layer to the upper by the first named metallic fasteners.

3. In the art of making shoes, the process which consists in removing a portion of the forepart of an insole so as to produce a marginal member only unitary with a shank, assembling the resulting skeletonized insole in superposed relation to a continuous layer of flexible material, imposing the assembled insole and layer of material upon a last, lasting an upper and temporarily securing the margins thereof to the insole and the flexible material, fastening the insole and layer of material permanently to the marginal portion of the upper by a row of permanent metallic fasteners, and stitching an outsole to the upper, the insole and said layer of material.

4. In the art of making shoes, the process which consists in removing a portion of the forepart of an insole so as to produce a marginal member only unitary with a shank, assembling the resulting skeletonized insole in superposed relation to a continuous layer of flexible material, uniting the insole at the skeletonized portion thereof to said continuous layer of material, imposing the assembled and united insole and layer upon a last, lasting an upper and temporarily fastening the margin thereof to said insole and flexible layer, fastening the marginal portion of the upper permanently to the insole and the added layer by a row of permanent metallic fasteners, and stitching an outsole and the upper to the insole and the added layer, whereby the outsole is permanently united to the upper, insole and added layer by one row of permanent fastenings and the insole and upper are permanently united to the added layer by a separate row of permanent fasteners.

In testimony whereof I have hereto signed my name this 7th day of February, 1921.

JOHN A. KELLY.