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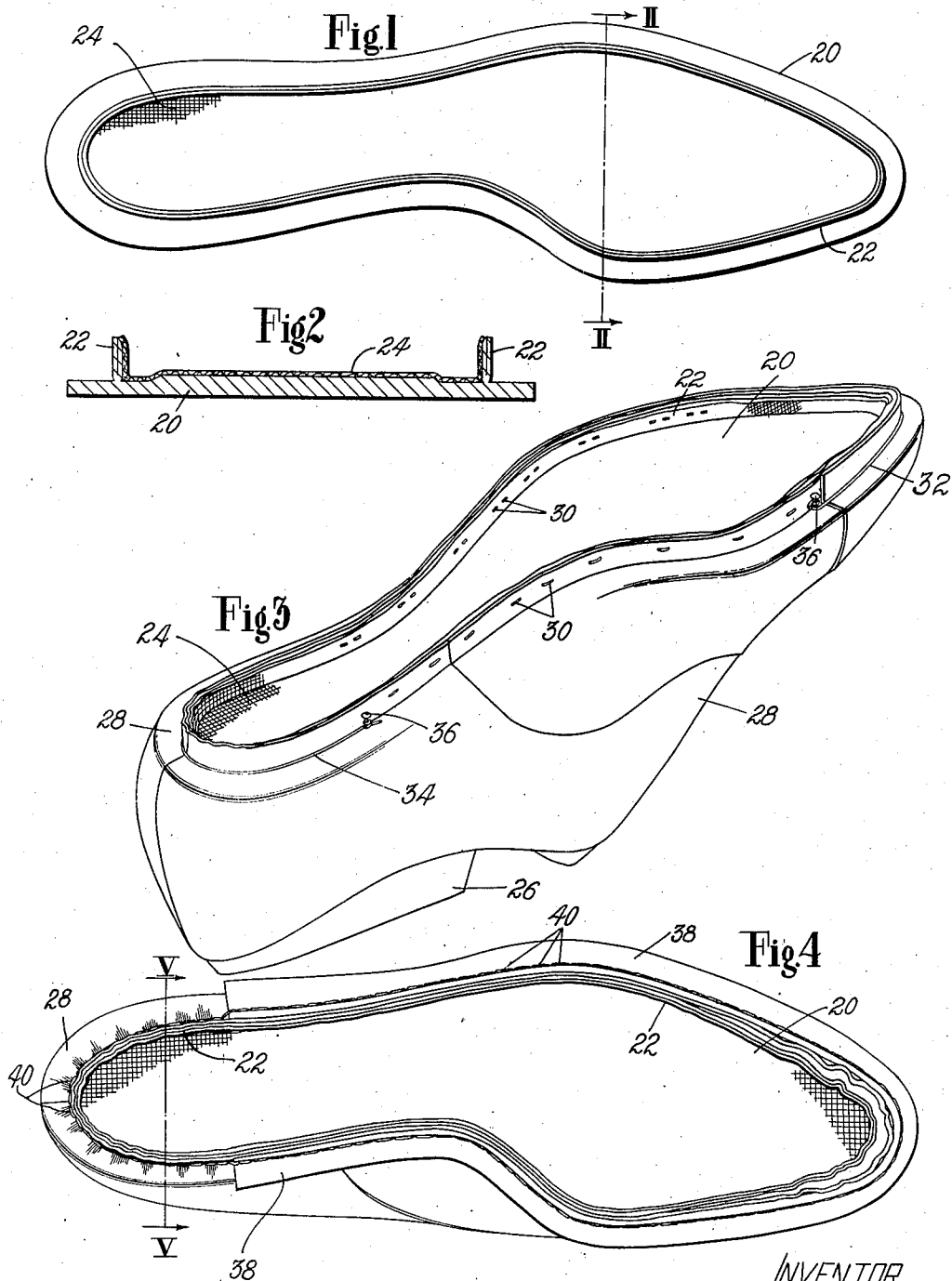
L. W. ROLLINS

2,183,697

SHOE

Filed Feb. 1, 1938

2 Sheets-Sheet 1



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By his attorney
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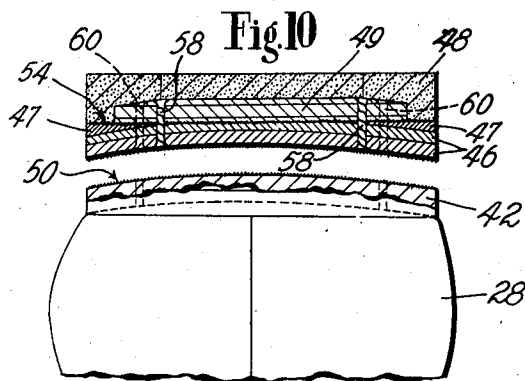
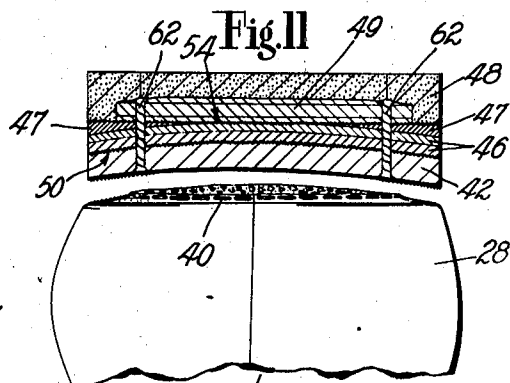
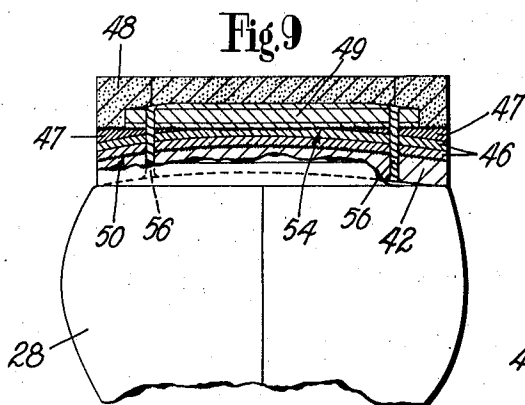
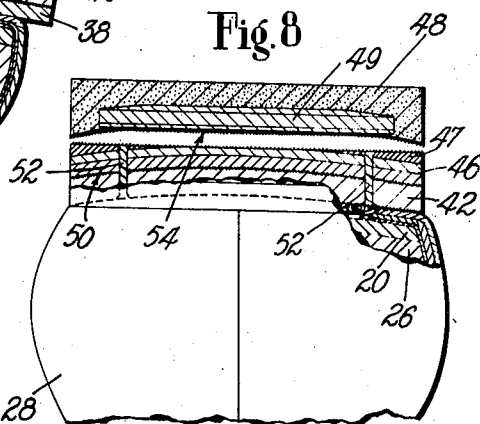
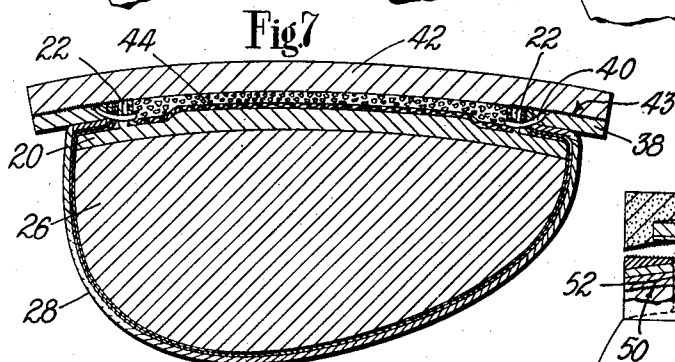
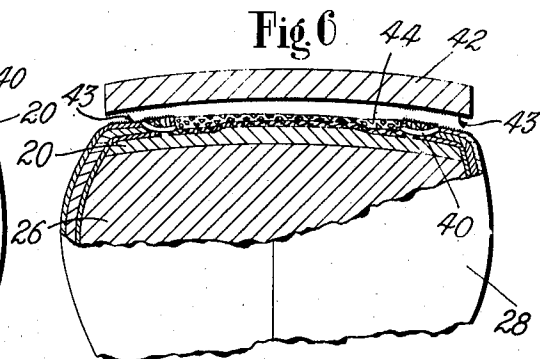
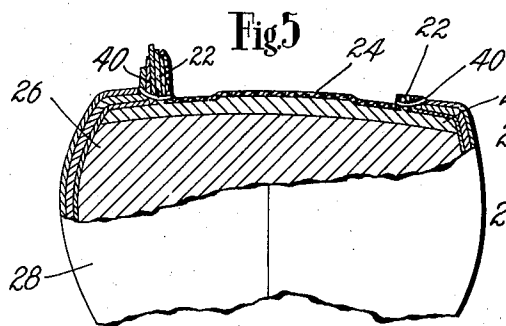
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SHOE

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2 Sheets-Sheet 2



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UNITED STATES PATENT OFFICE

2,183,697

SHOE

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Application February 1, 1938, Serial No. 188,102

3 Claims. (Cl. 36—12)

This invention relates to shoes and is illustrated herein by way of example with reference to the manufacture of welt shoes.

There is a growing demand in the shoe industry for shoes having so-called nailless heel seats, that is, shoes having no nails, tacks or metallic fastenings of any kind in their rear portions. This construction is advantageous because it lightens the shoe, eliminates deterioration of the shoe materials through rusting of metallic fastening means, and eliminates the danger of the points of heel attaching nails or lasting tacks working into positions inside the shoe to cause discomfort to the wearer. Moreover, it also prevents the formation of unsightly bumps or bunches on the inner surface of the insole during wear of the shoe as frequently occurs in shoes having their uppers lasted by tacks clinched against the insoles or having their heel members attached by nails driven from either the inside or the outside of the shoe bottom.

Objects of the present invention are to provide improved shoes having nailless heel seat portions.

The invention provides, as an improved article of manufacture, a shoe having no nails or other metal fastenings in its rear or heel portion. As illustrated, the upper materials at the heel seat portion of the shoe are secured in overlapped relation to the insole by attachment to a rib around the heel portion of the insole, this rib, as shown, being continuous around the entire marginal portion of the insole. The shoe is provided forwardly of the heel breast line with a welt which is omitted at the heel seat portion and the upper at said heel seat portion is permanently secured to the rib by a continuation of the insole or welt attaching stitches. The outsole, including its heel seat portion, is attached to the shoe by cement and the heel, comprising a usual heel base and a top lift, may be attached without the aid of metallic fastenings by cement and non-metallic fastenings which do not penetrate the insole.

With the above and other objects and features in view, the invention will now be described in connection with the accompanying drawings and will thereafter be pointed out in the claims.

In the drawings,

Fig. 1 is a plan view of an insole used in practicing the present invention;

Fig. 2 is an enlarged transverse sectional view through the forepart of the insole taken on the line II—II of Fig. 1;

Fig. 3 is a perspective view of a shoe upper secured in lasted relation to the insole;

Fig. 4 is a plan view of the shoe bottom after a welt has been attached forwardly of the heel breast line and the insole carried round the heel seat;

Fig. 5 is a view of the heel end of the shoe of Fig. 4 with the upper portion sectioned on the line V—V of that figure showing the shoe after the insole is sewn, the right-hand side of the shoe bottom having been trimmed;

Fig. 6 is a view similar to Fig. 5 showing the outsole ready to be applied;

Fig. 7 is a transverse sectional view through the forepart of the shoe after the outsole has been attached;

Fig. 8 is a view similar to Fig. 5 illustrating, in section, one way of attaching a heel base and top lift to the shoe; and

Figs. 9, 10 and 11 are views similar to Fig. 8, illustrating variations in the manner of attaching the heel base and top lift.

In making shoes having nailless rear portions, as illustrated herein, an insole 20 of leather or similar material is channeled entirely around its marginal portion, as indicated in Figs. 1 and 2, to provide channel flaps which are secured together in the usual manner to form a continuous upstanding rib 22 which extends around the entire margin of the insole including its rear or heel portion. As is customary in an insole of this type, which is commonly referred to as an Economy insole, the area of its outer surface which lies inside the continuous rib 22 may be reinforced with fabric material 24 which also covers the inner side of the rib. Since the rib extends around the rear or heel portion of the insole, the fabric reinforcement 24 preferably covers that portion of the insole and rib also, as shown in Figs. 1 and 3.

The insole 20 is assembled on a last 26 (Fig. 3) with an upper 28 comprising an outer layer, lining, counter and doubler, and the upper is pulled over in the usual manner. The side portions of the upper materials extending between the heel breast line and the tip line of the shoe are worked over the opposite margins or feather portions of the insole and are secured in lasted relation thereto by staples 30 which fasten the upper to the rib 22, the staples, as shown in Fig. 3, being clinched against the inner side of the rib. The toe and heel end portions of the upper are worked respectively over the toe and heel ends of the insole and are secured in overlapped relation thereto with their inner margins deflected into an upstanding position through engagement with the rib 22 by binding wires 32 and 34 which are fastened in position in the usual manner by anchor tacks 36, as illustrated in Fig. 3. The lasting operation at the toe and the heel seat portions of the shoe bottom is preferably performed with the aid of the well-known bed lasting machine, although it may, of course, be performed with other machines or by hand, if desired.

After the shoe has been lasted as described above, the usual insole operation is per-

formed to secure the upper 28 permanently to the rib 22 and, as is customary in welt shoes, to attach a welt 38 to the upper. In accordance with the present invention, however, the in-seam-
 5 ing and welting operation is modified to the extent that, while the welt 38 is stitched to the upper materials and rib forwardly of the heel breast line in the usual manner by in-seam
 10 stitches 40, as shown in Fig. 4, these same in-seam stitches 40 are continued around the heel seat portion of the shoe bottom and are utilized also to secure the upper materials 28 at such
 15 portion directly to the lasting rib 22. In other words, the welt 38 is stitched to the upper and rib by the in-seam 40 around the shoe forwardly
 20 of the heel breast line at which point the welt is omitted as usual but the in-seam stitches 40 are continued to secure the upper materials 28, including the outer layer, counter and lining, di-
 25 rectly to the rib 22 around the heel seat portion of the shoe. The method of performing this in-seaming operation may be varied as circumstances require but it is believed preferable to
 30 start attaching the welt 38 at one side of the shoe bottom, as usual, and to continue around the forepart and back to the heel breast line at the other side of the shoe. At this point the
 35 welt 38 may be cut and pulled out of the welt guide of the welting machine and the remainder of the shoe bottom, that is, the heel seat portion of the shoe, may be in-seam stitched without the welt. If desired, the heel seat portion of the shoe could be in-seam stitched first and the welt then stitched to the upper materials and rib throughout the shank and forepart of the shoe, the particular order of the steps being of no consequence.

The shoe is now subjected to the usual in-seam trimming operation which removes the up-
 40 standing surplus material of the upper and rib entirely around the shoe bottom. As is customary, the in-seam trimming cut at the side portions of the shoe passes as close as practicable to the in-seam 40 at such portions and thereby re-
 45 moves most or many of the staples 30. The trimming cut at the heel seat portion of the shoe bottom should also be located as close as possible to the in-seam 40 without actually cutting the stitches. Fig. 5 shows the right-hand side
 50 of the heel seat portion of the shoe bottom trimmed in the desired manner.

The shoe bottom is next prepared for receiving an outsole. The in-seam and remainder of the trimmed material at the heel seat portion of the
 55 shoe are leveled as flat as possible against the shoe bottom by a pounding or leveling operation, and the overlapped marginal portions of the upper are roughened in the usual manner. Cement 43 such, for example, as pyroxylin cement
 60 is applied thereto and allowed to dry. An outsole 42 is prepared for cement attachment to the shoe bottom by roughening the marginal portion of its inner surface entirely around the periphery of the outsole, including its heel seat
 65 portion, applying pyroxylin cement 43 to the roughened area, and permitting the cement to dry. At the forepart of the shoe the welt 38 is likewise roughened on its outer or exposed surface and pyroxylin cement 43 is applied and
 70 allowed to dry. Filler material 44 (Figs. 6 and 7), such as ground cork and a suitable binder, is applied to the forepart of the shoe to fill the space between the remaining upstanding portions of the rib 22 and also, if necessary, be-
 75 tween the flattened portions of the rib at the

rear or heel seat portion of the shoe. As shown in Fig. 6, the heel seat portion of the shoe bottom will not require as much filler material as the forepart because the material at the in-seam
 5 has been flattened down considerably by the leveling operation. In addition to the filler material a usual shank piece or stiffener (not shown) may be located between the ribs at the shank portion of the shoe in the customary
 10 manner.

The cement 43 on the outsole and also on the welt and on the upper at the heel seat portion of the shoe is next activated by a solvent and the outsole is positioned on the shoe bottom and cement attached thereto in a sole attaching
 15 press of any usual construction in which the shoe may be maintained under pressure until the cement 43 has set. The outsole is thus permanently attached to the shoe bottom over its entire area, including its heel seat portion,
 20 by pyroxylin cement which sticks the outsole to the welt 38 and adjacent portions of the upper and rib at the forepart and shank portions of the shoe, and to the overlapped portion of the upper at the heel seat portion of the shoe.

The next operation in making my improved shoe having a nailless heel seat, is to attach a heel consisting of a heel base and a top lift, which is usually of rubber, to the shoe bottom. This may be accomplished in several ways which
 30 differ slightly from each other but all of which produce a strong and permanent heel construction in which there is no metal. As illustrated in Fig. 8, a heel base 46 is provided composed of a plurality of leather layers or lifts and hav-
 35 ing an inwardly tapered rand 47 secured to the marginal portion of one of its surfaces whereby that surface or, if desired, the opposite surface is rendered concave or cupped to fit the heel seat of the shoe. As herein illustrated, the rand 47
 40 is attached to the outer surface of the laminated heel base, that is, the surface opposite the cupped surface which is to engage the outsole, and this sole engaging surface is formed from the grain side of the inner lift so that a grain surface will
 45 contact directly with the grain surface of the outsole. The placing of these two grain surfaces in direct contact with each other results in a strong and permanent cement bond between the heel base and the outsole.

The heel base 46 may be first applied to the heel seat portion of the outsole 42 and a top lift or heel
 50 48 of rubber or rubber composition may be thereafter attached to the heel base, this rubber heel preferably being of the construction shown in
 55 Letters Patent of the United States No. 1,741,037 granted December 24, 1929 on an application filed in the name of Clifford Roberts and having a three ply laminated core 49. In carrying out this operation the heel seat portion of the outer sur-
 60 face of the outsole is roughened, preferably over its entire area, to remove the grain therefrom and cement such, for example, as pyroxylin cement 50, is applied to the roughened surface and allowed to dry. The inner or grain surface of
 65 the heel base 46 is treated in a similar manner and the cement on one or both of these surfaces is activated by a solvent after which the base is stuck to the heel seat portion of the outsole under pressure. In order to insure that the several
 70 sections or lifts forming the heel base will not separate or "check" during the wear of the shoe and also, in the case of a relatively slow setting cement, to insure the heel base will become firmly
 75 attached to the outsole without the necessity

of holding the shoe under pressure while the cement is setting, fastenings 52 are now driven through the base and outsole, these fastenings being of the character disclosed in United States Letters Patent No. 1,729,169, granted September 24, 1929, on an application filed in the name of Fred N. La Chapelle. As disclosed in that patent, the fastenings 52 are composed of felted fibrous material which is twisted during its manufacture and is sized with appropriate stiffening material to form a so-called fiber fastening or peg. As shown in Fig. 8, the fiber fastenings 52 securing the heel base 46 to the outsole, pass through the base and outsole but do not penetrate the insole 20 and, accordingly, no fastening means will appear inside the shoe at its heel seat portion. The rubber heel or top lift 48 may now be coated on its inner or attaching surface with a cement 54 suitable for securing rubber to leather such, for example, as polymerized chloroprene cement of the type disclosed in Letters Patent of the United States No. 2,061,296 on an application filed in the name of W. H. Wedger and known to the trade as "Supergrip" cement although a cement having a rubber base could be used if desired. The top lift may now be stuck to the heel base under pressure in any usual or convenient manner.

Instead of first attaching the heel base 46 to the outsole 42, as described above, the proper surfaces of the heel base and outsole may both be roughed and coated with pyroxylin or polymerized chloroprene cement and the adjoining surfaces of the heel base and rubber top lift 48 may be coated with chloroprene or a rubber cement. The heel members may then be attached to the outsole simultaneously in a single operation in the manner illustrated in Fig. 9. When the heel members are attached in this manner, the fiber pegs or fastenings for reinforcing the attachment and, if necessary, for holding the heel base against the outsole while the cement is setting, must be driven through the rubber top lift as well as through the heel base and outsole. Accordingly, pegs 56, which are long enough to extend through these three members, are utilized, these pegs, however, not penetrating the insole and being sunk into the rubber top lift until their top ends are clinched or upset against the laminated core 49.

If desired, the rubber top lift 48 and the heel base 46 may be first stuck together with chloroprene or a rubber cement 54, in the manner illustrated in Fig. 10, and short fiber fastenings or pegs 58 may be driven through these two members to reinforce their attachment to each other. The heel seat portion of the outsole 42 may then be coated with cement 50, as described above, and the complete heel unit may be cement attached to the outsole by utilizing additional fiber fastenings 60 which are of sufficient length to extend through the heel unit and the outsole but not to penetrate the insole, these fastenings 60 being indicated by dotted lines in Fig. 10.

Another method of attaching the heel and heel base to the outsole is illustrated in Fig. 11. In accordance with this method the outsole 42 may be prepared for cement attachment to the shoe bottom, including the heel seat portion of the outsole, as described above but, before the outsole is attached to the shoe, the heel base 46 and the top lift 48 may be coated respectively on their inner surfaces with pyroxylin cement 50 and

chloroprene or a rubber cement 54 in the manner already explained. The heel base, top lift and outsole may then be cement attached together to form a complete sole and heel unit, fiber pegs or fastenings 62 being utilized, as before, to reinforce the attachment and prevent the sections or plies forming the heel base from separating or checking during wear of the shoe. After the sole and heel unit have been prepared in the manner described, the cement on the inner surface of the outsole, on the welt and on the upper at the heel seat portion of the shoe bottom may be activated and the complete sole and heel unit may be cement attached to the shoe bottom in a single operation.

It is to be understood that the present invention is not intended to be limited to shoes of the type herein disclosed, but may be carried out in connection with other types of shoes in which the outsoles are, or may be, attached throughout their entire areas by cement, and in which the heel seat portions of the uppers may be lasted without the use of metallic fastenings as, for example, by cement. It should be further understood that, although the nature of the adhesives referred to herein are considered preferable in the construction of a shoe of the type illustrated, other types of cement could obviously be used.

Having described my invention, what I claim as new and desire to secure by Letters Patent of the United States is:

1. In a shoe, an insole having a rib extending around its entire margin including its heel portion, an upper, and a welt extending around the forepart and shank portions of the shoe and terminating at the heel breast line thereof, said upper and welt being secured to said rib by stitches forwardly of said heel breast line, and said stitches continuing around the heel portion of the shoe and securing the upper only to said rib around said heel portion.

2. In a shoe, an insole having a rib around its entire marginal portion including its heel portion, an upper, a welt extending around the forepart and shank portions of the shoe but terminating at the heel breast line thereof, said upper and welt being secured to the insole rib by stitches around the forepart and shank portions of the shoe and said upper alone being secured to said rib around the heel portion of the shoe by a continuation of said stitches, and an outsole attached by cement to the welt forwardly of the heel breast line and attached by cement to the upper alone rearwardly of said heel breast line.

3. A shoe comprising an insole having a lasting rib extending around its entire margin including its heel portion, an upper, a welt extending around the forepart and shank portions of the shoe but terminating at its heel breast line, said upper and welt being secured to the insole rib by stitches forwardly of said heel breast line, said stitches continuing around the heel portion of the shoe and securing the upper only to the rib at said heel portion, an outsole attached to the welt forwardly of the heel breast line and secured to the upper alone rearwardly of said heel breast line, and a heel including a base and a top lift secured to the outsole by non-metallic fastening means, thereby providing a nailless heel seat portion on the shoe.

LEROY W. ROLLINS.