April 24, 1951 J. D. CHANDLER 2,549,960

METHOD OF BOTTOMING SHOES

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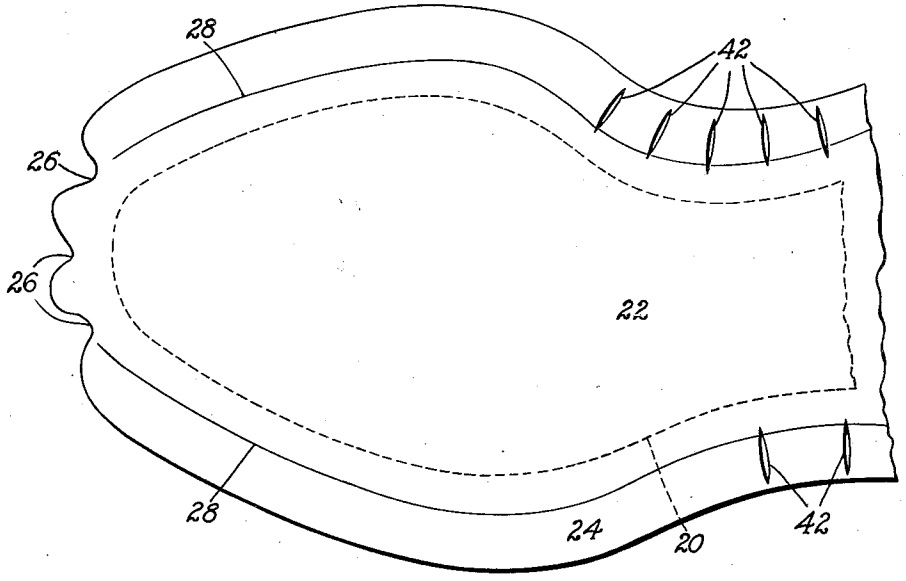


Fig. 1

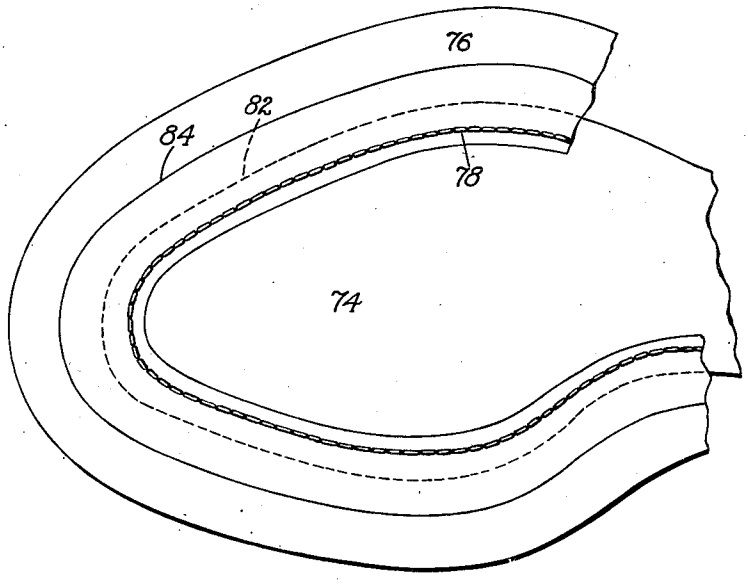


Fig. 2

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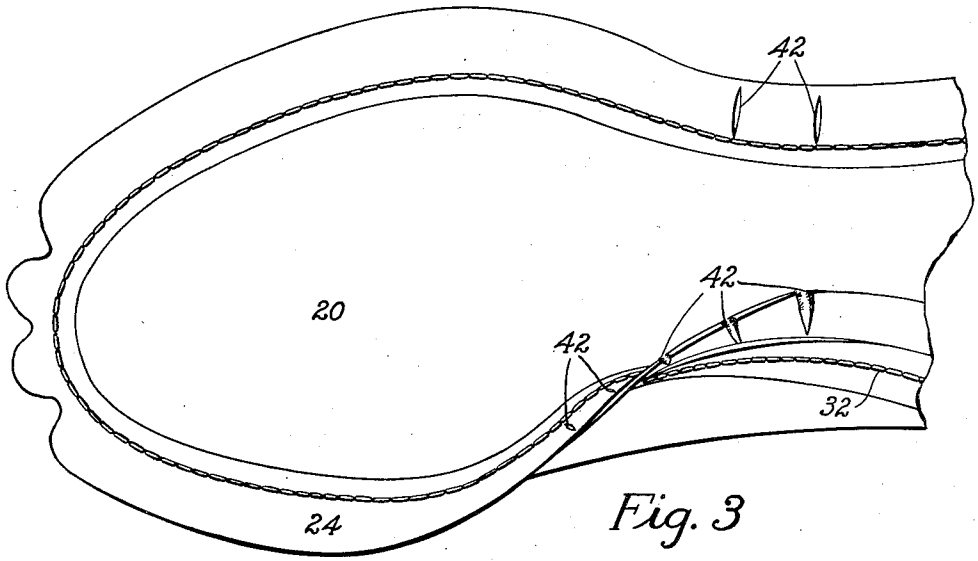


Fig. 3

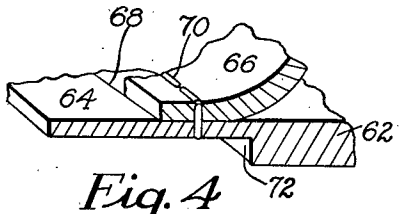


Fig. 4

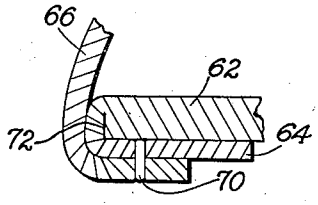


Fig. 5

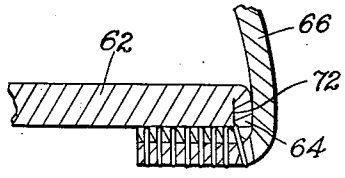


Fig. 6

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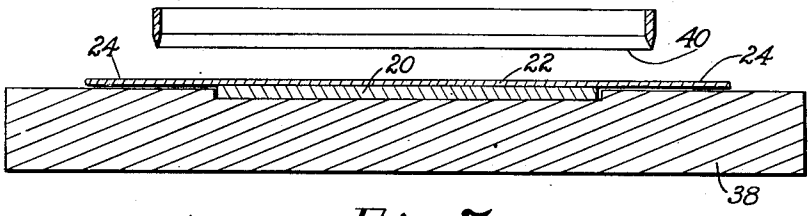


Fig. 7

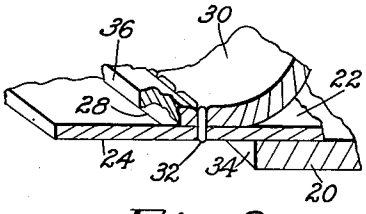


Fig. 8

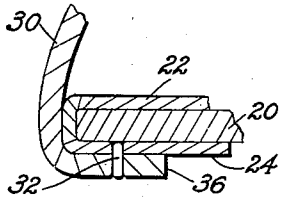


Fig. 9

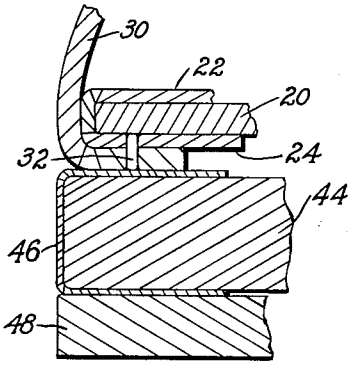


Fig. 10

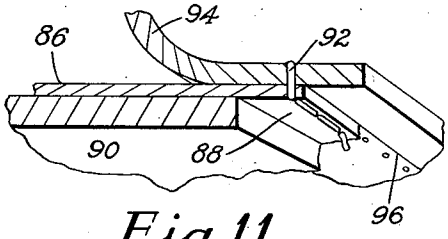


Fig. 11

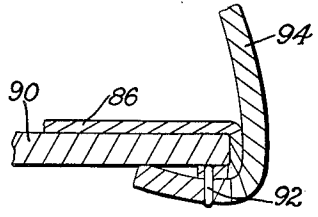


Fig. 12

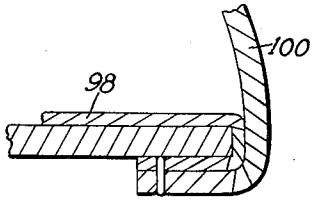


Fig. 13

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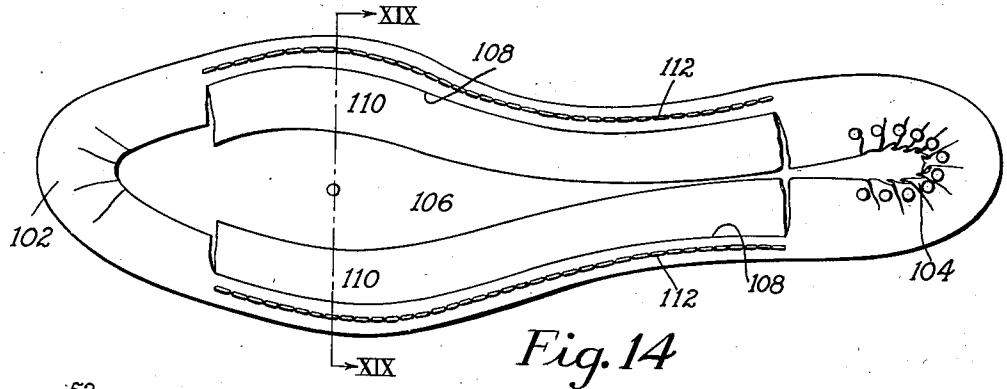


Fig. 14

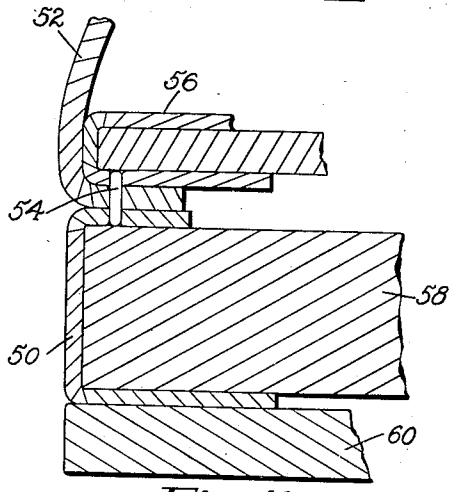


Fig. 15

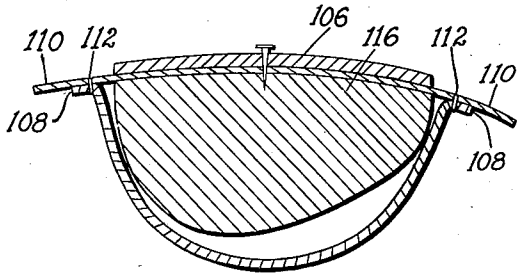


Fig. 18

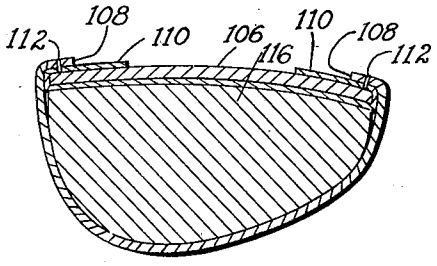


Fig. 19

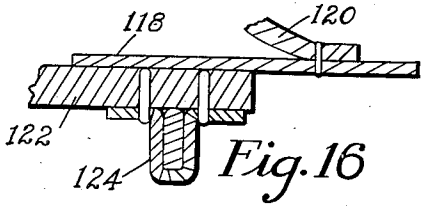


Fig. 16

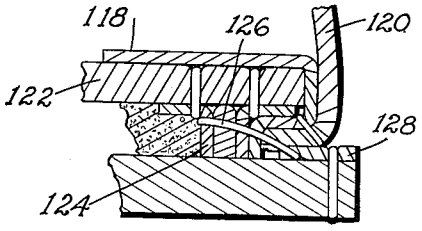


Fig. 17

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Patented Apr. 24, 1951

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UNITED STATES PATENT OFFICE

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METHOD OF BOTTOMING SHOES

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Application May 23, 1946, Serial No. 671,722

2 Claims. (Cl. 12—142)

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This invention relates to the manufacture of shoes and in particular to the manufacture of that type of shoe in which an upper, or a portion of an upper, is secured to an insole or a sock lining before the upper receives its final shape. In accordance with this invention the upper may be shaped over a last in a manner similar in some respects to the shaping of known types of lasted footwear; or alternatively, it may be shaped by the insertion of a last, or other form, into the shoe after the shoe has been given a preliminary shape by the attachment of the upper to the insole. The manufacture of shoes in accordance with this invention is suited to numerous types of construction including closed uppers, uppers with open ends, and various strap sandal constructions. Shoes embodying features of the present invention may be made with or without intermediate soles.

It is an object of this invention to effect economies in both material and labor in the manufacture of shoes without limiting the manufacturer to a narrow range of shoe types and methods of construction. It is a further object of the invention to effect these economies in such a manner that no sacrifice is made in the wear of shoes or in their shape retaining qualities.

With these objects in view, the present invention in one aspect thereof consists in providing an insole member of last bottom shape, so securing a lining member to the foot-facing surface of the insole member that its margin extends beyond the edge face of the insole member, causing the margin of the lining member to extend outwardly in the plane of the foot-facing surface of the insole member, while the lining member is in said outwardly extending position, securing the insole attaching margin of an upper to the margin only of the lining member with the edge of the upper in predetermined relation to the edge face of the insole member, folding the united margins of the upper and the lining member inwardly around the edge face of the insole member, and attaching them to the outsole-facing surface of the insole member.

In its application to the manufacture of shoes having closed uppers the invention in a further aspect thereof consists in providing an insole having a body portion of last bottom shape and an upper attaching margin extending lengthwise of the insole from the tip line to the breast line and omitted at the toe end of the insole and extending widthwise of the insole substantially beyond the edge face of said body portion, securing to the upper-attaching margin of the insole the

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opposite side portions of the bottom margin of the upper only, folding the united margins of the upper and insole around the body portion of the insole, attaching said united margins to the outsole facing surface of the insole, inserting a last into the upper, lasting the toe portion of the upper over the toe portion of the insole, and completing the shoe. In the practice of the above-described method of making shoes with closed uppers a last is inserted into the upper either before or after folding the united margins of the upper and insole around the body portion of the insole. If the upper is to be shaped by stretching it over the last, the last is inserted before the united margins are folded around the body portion of the insole. Otherwise the upper is initially shaped by the attachment of said united margins to the outsole-facing surface of the insole while the shoe is off the last and thereafter the last is inserted to give the shoe its final shape. In either case the end portions of the upper are shaped over the last in accordance with the usual lasting practice.

In any of the above constructions the upper-attaching margin of the insole may be integral with the body portion of the insole, or alternatively, it may be an extension of a member, such for example as a sock lining, secured to the foot-facing surface of the insole.

The invention will now be described with reference to the accompanying drawings illustrating various alternative embodiments thereof, and will be pointed out in the appended claims.

In the drawings,

Fig. 1 is a plan view illustrating the shank and forepart of a sock lining attached to the corresponding portion of an insole;

Fig. 2 is a plan view similar to Fig. 1 illustrating an alternative construction consisting of the combination with an insole of a tape attached to and projecting beyond the margin of the insole;

Fig. 3 is a plan view similar to Fig. 1 looking at the outsole-facing surface of the insole, a portion of the margin of the sock lining together with the margin of an upper attached thereto being wiped inwardly over the margin of the insole;

Fig. 4 is a perspective view illustrating a portion of the margin of an insole and a portion of an upper stitched to the margin of the insole;

Fig. 5 is a sectional view showing the parts illustrated in Fig. 4 in their position after the next succeeding step in the making of the shoe;

Fig. 6 is a sectional view similar to Fig. 5 illustrating a modification in the attachment of the upper to the margin of the insole;

Fig. 7 is a sectional view illustrating marking instrumentalities and a combined insole and sock lining mounted in predetermined relation thereto;

Fig. 8 is a perspective view illustrating a portion of a combined insole and sock lining and a portion of an upper attached to the margin of the sock lining;

Fig. 9 is a sectional view illustrating the parts shown in Fig. 8 in their position after the next succeeding step in the making of the shoe;

Fig. 10 is a sectional view showing portions of a platform and an outsole attached to the assembly illustrated in Fig. 9;

Fig. 11 is a perspective view similar to Fig. 8 showing an alternative construction;

Fig. 12 is a sectional view similar to Fig. 9 showing the assembly illustrated in Fig. 11 in its arrangement after the next succeeding step in the making of the shoe;

Fig. 13 is a sectional view similar to Fig. 12 illustrating another alternative construction;

Fig. 14 is a plan view similar to Fig. 3 illustrating the application of the construction shown in Fig. 3 to the manufacture of shoes having closed uppers;

Fig. 15 is a sectional view similar to Fig. 10 illustrating an alternative construction;

Fig. 16 is a sectional view illustrating a portion of an insole having a stitch receiving rib applied to its outsole-facing surface and a sock lining attached to its foot-facing surface, a portion of an upper being shown attached to the margin of the sock lining;

Fig. 17 is a sectional view illustrating the parts shown in Fig. 16 at a later stage in the making of the shoe, an outsole being shown stitched to a welt secured to said rib;

Fig. 18 is a cross-sectional view showing the upper of Fig. 14 loosely mounted on a last; and

Fig. 19 is a section on the line XIX—XIX of Fig. 14.

Fig. 1 illustrates a composite insole comprising an insole member **20** and a sock lining **22** cement-attached to the insole member. The sock lining has a margin **24** substantially wider than the usual lasting allowance of an upper. Preferably the width of the margin of the sock lining projecting beyond the edge face of the insole member is sufficient to permit a secure cement attachment of said margin to the outsole-facing surface of the insole member after wrapping said margin around said face of the insole member. In the illustrated construction the margin **24** has its toe portion recessed or scalloped or pinked at **26** to obviate the occurrence of pleats in the margin in wiping it over the margin of the insole. An upper, preferably of the type having an open toe and an open heel, is provided with a sole attaching margin of uniform and predetermined width. The upper is located longitudinally of the sock lining with relation to match marks (not shown) and is positioned widthwise of the sock lining by arranging its edge to coincide with a mark **28** formed on the margin of the sock lining. As shown in Fig. 8 an upper **30** is positioned on the margin of the sock lining with its inner surface contiguous to the upper or foot-facing surface of the sock lining, the upper being secured in this position by stitches **32**. The margins of the sock lining and the upper thus united are wrapped around the edge face **34** of the insole member, the sock lining and the insole member having previously been coated with cement so that the united margins are attached to the outsole-facing

surface of the insole member in the position illustrated in Fig. 9. The cement attachment of the margin of the sock lining to the insole member extends about the entire periphery of the insole member thus producing a composite insole the entire foot-facing surface of which is covered by the sock lining and the exposed end portion of which has its marginal portion wrapped or bound by the margin of the sock lining thus giving the insole a trim and finished appearance. The wrapping of the margin of the sock lining about the margin of the insole member brings the edge **36** of the upper inwardly under the outsole-facing surface of the insole member and locates it in predetermined and uniform relation to the edge face **34** of the insole member thus producing a shoe the forepart of which has a foot-receiving opening having accurately predetermined girths. Preferably said girths are slightly less in length than corresponding girths of the last which is forced into the shoe to expand the upper to its final shape. It will be understood that in order to achieve the results above described it is necessary not only to provide an accurately prefitted upper with a uniform and predetermined sole attaching margin but it is also necessary to locate the mark **28** on the sock lining in uniform and accurately predetermined relation to the edge face **34** of the insole member. In accordance with my preferred method this is accomplished by cementing the sock lining to the foot-facing surface of the insole member and mounting the assembly on a block or bed plate **38** (Fig. 7) with the insole member seated in a recess corresponding thereto in size and shape and having vertical walls which accurately locate the assembly in a predetermined position on said bed plate. A suitably constructed marking member **40** is mounted on a carrier (not shown) which brings the marking member into engagement with the sock lining with its marking edge in uniform and predetermined spaced relation to the vertical wall of the recess in the bed plate **38**. It will be seen that the operation of the member **40** produces on the foot-facing surface of the sock lining a mark having a uniform and predetermined spaced relation to the edge face of the insole member as, for example, the mark **28** illustrated in Fig. 1. After inserting a last into the shoe to expand the upper to its final shape, the shoe is completed by the cement attachment of an outsole to the shoe bottom.

It is usually desirable to slit the margin of the sock lining at those portions of the shank portion of the sock lining where the edge face of said lining is of concave curvature in order to facilitate the wrapping of said margin about the margin of the insole member. I prefer to form the required slits in said margin before coating the margin with cement for attachment to the insole member. I have found, however, that in order to coat said margin in a cementing machine, it is desirable that said margin be substantially continuous and unbroken. In the illustrated construction I have achieved this objective by forming in the concave portions of the margin **24** slits **42** which do not extend to the edge of the sock lining but terminate close enough to said edge so that the material between the end of the slits and the edge of the sock lining is ruptured with no appreciable effort in wrapping the margin of the sock lining around the margin of the insole member. Fig. 3 illustrates the operation of wrapping the united margins of the upper and

sock lining around the margin of the insole member at the inside portion of the shank.

In accordance with one method contemplated by the present invention, after the united margins of the upper and the sock lining are wrapped around the insole member and cement attached thereto, a last (not shown) is forced into the upper thereby expanding the forepart of the upper to its final shape. The last remains in the shoe during the remaining shoe-making operations and until the upper has set to the shape of the last. After inserting the last, the outsole-attaching surface of the inturned margin of the upper is roughed, if necessary, for the application of cement thereto, said roughing operation preferably being performed in a machine such as that illustrated in United States Letters Patent No. 1,989,078, granted January 29, 1935, on an application filed in the name of Charles G. Brostrom. The roughing operation removes the greater part of the exposed portions of the stitches **32** attaching the upper to the margin of the sock lining. In order to prevent any separation of the upper from the sock lining in the wear of the shoe and because of such weakening of the stitches, I prefer to use for the outsole attaching operation a cement which, when applied to the roughed margin of the upper, will work into and around the frayed end portions of the stitches and securely hold them in place in the upper and prevent the upper from working away from the stitches. I have found that pyroxylin cement will hold the upper and the stitches against separation and will also provide a sufficiently strong attachment for the outsole. In some cases it may be found desirable to use two or more rows of stitches in securing the upper to the margin of the sock lining instead of a single row of stitches **32** as shown in Figs. 8 and 9. If because of the thinness of the upper material it should be desirable to avoid the roughing operation, or, if the upper is made of a material which does not lend itself readily to the roughing operation, I propose to secure the margin of the upper to the margin of the sock lining by a plurality of rows of stitches as shown in Fig. 6 extending throughout the entire width of the margin of the upper. The pyroxylin cement will readily adhere to the exposed portions of said stitches thus insuring the attachment of the outsole to the entire width of the margin of the upper.

If the shoe is to be provided with a platform sole, I contemplate the use of either of two alternative constructions, one illustrated in Fig. 10 and the other in Fig. 15. In the first-mentioned construction a platform sole **44**, the marginal portion of which is bound or finished by a suitable wrapper **46**, is cement attached to the shoe bottom in the manner above described for outsole attachment and an outsole **48** is secured preferably by cement to said platform sole. In the construction illustrated in Fig. 15, a platform wrapper **50** is secured to the margin of an upper **52** by stitches **54** which also serve to secure the upper to the margin of a sock lining **56**. After the last is inserted a platform sole **58** is laid on the platform wrapper which is then in outspread position and the wrapper is wiped up and over the edge face and bottom surface of the platform sole and cement attached thereto. An outsole **60** is then secured to the platform sole as above described.

If it should be found desirable to avoid the use of a sock lining, this may be achieved by employing the construction illustrated in Figs. 4, 5 and 6. In this construction an insole **62** preferably of grain leather with its grain surface facing the foot is formed with a wide margin **64** corresponding to the margin **24** of the sock lining in Figs. 8 and 9. An upper **66** is located with relation to a mark **68** on the margin **64** in the manner heretofore described and secured to said margin by stitches **70**. The thickness of the margin **64** is reduced preferably by rabbeting the said margin as shown in Fig. 4 in order to permit the united margins of the upper and insole to be wrapped around the edge face **72** of the insole as shown in Fig. 5 and cement attached to the outsole-facing surface of the insole.

In Fig. 2 there is illustrated an alternative construction comprising an insole **74** to which a member illustrated as a tape **76** is secured by stitches **78**. The tape **76** has applied thereto a mark **84** corresponding to the mark **28** on the sock lining **22** illustrated in Fig. 1. As in the construction above described, the mark **84** serves as an index for the location of the bottom edge of an upper to be stitched to the tape. The tape **76** is preferably the usual bias cut binding tape. When the construction illustrated in Fig. 2 is employed, the foot-facing surface of the insole and the margin of the tape **76** are covered by a suitable sock lining (not shown) which is inserted into the shoe after it is otherwise completed. In this construction the sock lining may be made of cardboard if desired thus permitting a saving in the cost of materials over the construction illustrated in Fig. 1. The use of the loose sock lining also makes possible various color combinations which cannot be achieved when the construction illustrated in Fig. 1 is used, and also eliminates the necessity of a heel pad. It will be understood that the desired result may also be achieved by employing the assembly illustrated in Fig. 1 in conjunction with a loose sock lining.

In Figs. 11 and 12 there is illustrated an alternative construction characterized by a sock lining **86** having a relatively narrow margin **88** extending beyond the edge face of an insole member **90** to which the sock lining is cement attached. Attached to the margin **88** of the sock lining by stitches **92** is an upper **94**, the margin of which is substantially wider than the margin of the upper **30** illustrated in Figs. 8 and 9 and extends beyond the edge of the sock lining. In this construction the upper and sock lining are located relatively to each other by causing the edge of the sock lining to register with an index mark **96** on the inner surface of the upper. This construction is employed to advantage when the cost of the sock lining material is a critical factor in the manufacture of a shoe. It will also be seen that in this construction the width of the margin of the upper is not critical, the only requirement being that there be sufficient upper material extending beyond the edge of the sock lining for cement attachment to the outsole-facing surface of the insole member as shown in Fig. 12. The outsole is cement attached to the inturned margin of the upper after roughing the margin of the upper to permit the cement to penetrate it. In this construction no thought need be given to the effect of the roughing operation on the stitches **92** since the upper is secured to the insole member by cement as above described and the portion of the stitches remaining after the roughing operation will in any case be adequate to hold the sock lining against misplacement.

In Fig. 13 there is illustrated still another alternative construction in which a sock lining 98 and an upper 100 have margins of uniform and predetermined widths, the upper being positioned relatively to the sock lining by positioning its bottom edge to coincide with the edge of the sock lining.

Fig. 14 illustrates the application of this invention to a shoe having a closed upper. This shoe is made on the last, the toe portion 102 and the heel portion 104 having the usual lasting allowance and being lasted over and fastened to an insole 106 in the usual manner. Between the tip line and the heel breast line the bottom margin of the upper is relatively narrow, the edge of the upper being indicated by the numeral 108. Referring to Fig. 13, the bottom margin of the upper between the tip line and the heel breast line is secured to the margin of a sock lining 110 by stitches 112, the upper being located on the sock lining with reference to an index mark as in the construction illustrated in Figs. 8 and 9. The girthwise dimension of the upper is such that when the upper and sock lining are lasted over an insole mounted on a last 116, the upper is drawn tightly around the last and shaped thereto. It will be understood that uppers having open toes and open heels and shoes having sandal type uppers may also be shaped over a last in accordance with the method above described.

In Figs. 16 and 17 there is illustrated a modified construction in which the upper illustrated in Figs. 8 and 9 is mounted on an insole provided with an inseam rib. Referring to Fig. 16, a sock lining 118 having an upper 120 stitched thereto is secured to the foot-facing surface of an insole member 122. Secured to the margin of the outsole-facing surface of the insole member is an inseam rib 124 which may be of any known construction. The illustrated insole member is of substantial thickness, and contrary to the usual practice in Goodyear welt shoemaking, the thickness of the insole member is the same at the margin as it is at its central portion. In the manufacture of this shoe the united margins of the upper and sock lining are wrapped around the margin of the insole member and secured to the rib 124 by stitches 126 (Fig. 17), said stitches serving also to secure an outsole-attaching welt 128. From this point the manufacture of the shoe proceeds in accordance with known methods of manufacturing Goodyear welt shoes.

In the manufacture of the various constructions above described, the last may be inserted into the shoe either before or after the united margins of the upper and insole are wrapped around the body portion of the insole and secured to its outsole-facing surface. If the last is inserted before said margins are wrapped around and secured to the insole the upper receives its final shape in said wrapping operation, the dimensions of the upper being such that the upper is drawn down to the last and in most cases stretched as in the usual lasting operation when the upper is wrapped around the insole. If the united margins are permanently attached to the insole before the last is inserted into the upper the upper is expanded to its final shape by the insertion of the last.

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

1. That method of making shoes which comprises providing an insole member of last bottom shape, so securing a lining member to the foot-facing surface of the insole member that its margin extends beyond the edge face of the insole member, causing the margin of the lining member to extend outwardly in the plane of the foot-facing surface of the insole member, while the lining member is in said outwardly extending position securing the bottom margin of an upper to the margin only of said lining member with the edge of the upper in predetermined relation to the edge face of the insole member, folding said united margins inwardly around the edge face of the insole member, and attaching them to the outsole-facing surface of the insole member.

2. That method of making shoes which comprises providing a flat insole having a body portion the edge face of which delineates the periphery of the interior of the shoe bottom and an upper-attaching margin extending lengthwise of the insole from the tip line to the breast line and omitted at the toe end of the insole and extending widthwise of the insole substantially beyond the edge face of said body portion, securing to the upper-attaching margin of the insole the opposite side portions of the bottom margin of a closed upper only, folding the united margins of the upper and insole around the body portion of the insole, attaching said united margins to the outsole-facing surface of the insole, inserting a last into the upper, lasting the toe portion of the upper over the toe portion of the insole, and completing the shoe.

JAMES D. CHANDLER.

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