June 18, 1940. K. ENGEL 2,204,669

MANUFACTURE OF WELT SHOES

Filed Dec. 23, 1937

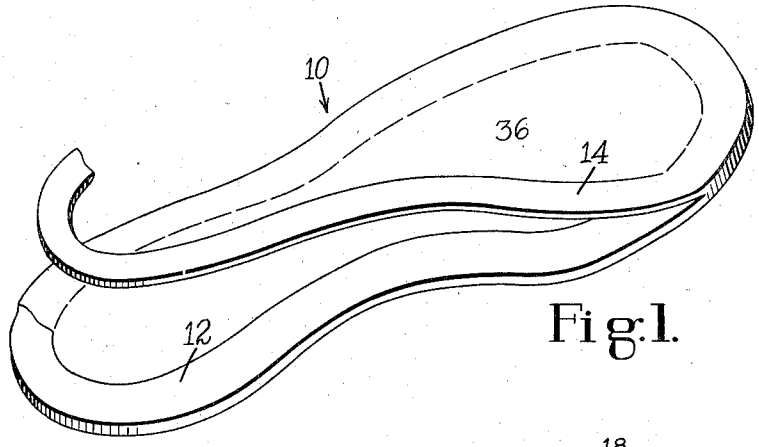


Fig. 1.

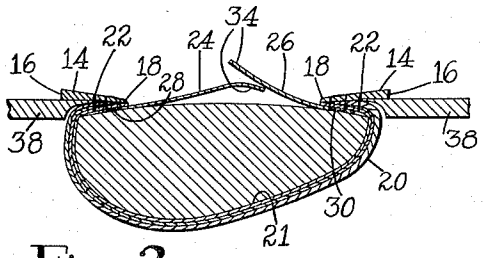


Fig. 2.

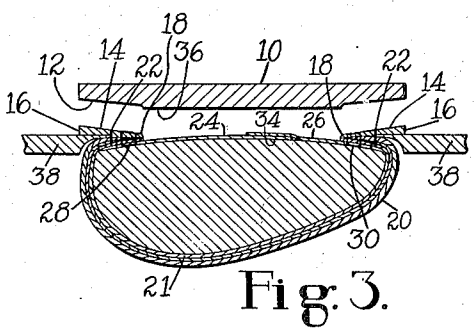


Fig. 3.

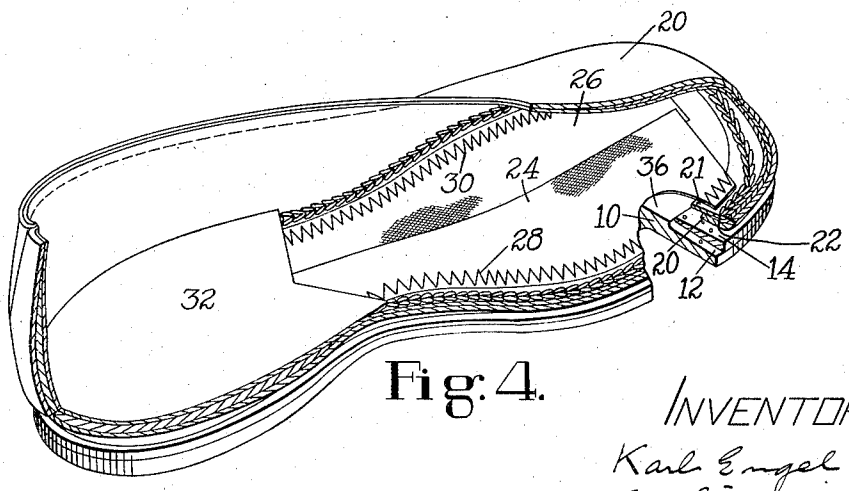


Fig. 4.

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Patented June 18, 1940

2,204,669

UNITED STATES PATENT OFFICE

2,204,669

MANUFACTURE OF WELT SHOES

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Application December 23, 1937, Serial No. 181,333

1 Claim. (Cl. 12—142)

This invention relates to the manufacture of shoes of those types in which a shoe upper is provided with a welt to which a sole is attached. The invention is herein illustrated in its application to the manufacture of pre-welted shoes, that is, shoes in the manufacture of which a welt is stitched to the upper before the upper is lasted.

In the commercial manufacture of shoes provided with sole-attaching welts there is a space in the shoe bottom after the lasting operation which in Goodyear welt shoes is ordinarily filled with a cork paste and in pre-welted shoes is ordinarily filled by a raised central portion of an insole or by a filler piece of cork or felt or like material which is cut to fit the space enclosed by the inner edge face of the welt after the upper has been lasted. It is an object of the present invention to obviate the requirement of a filler or the like in the manufacture of shoes having sole-attaching welts thereby to reduce the cost of material and labor required for the manufacture of such shoes and also to provide a superior product.

With the above object in view the invention in one aspect thereof consists in an improvement in methods of making shoes which comprises providing a thread sole having a welt-receiving rabbet defined by an inner shoulder and providing a welt complemental to said rabbet and shaped to register with said rabbet, said welt as herein illustrated being the strip cut from the sole in forming the rabbet, securing said welt to the bottom margin of an upper which has not been lasted with the inner margin of the welt extending beyond the edge of the upper, positioning a sock lining member with its outer margin in engagement with the welted margin of the upper and arranged to cover the edges of the upper and the welt and securing the sock lining to the welted margin of the upper by a zig-zag seam the outer portions of which extend through the welt, upper, and sock lining, while its inner portions extend through the welt and sock lining but not through the upper, the edge of the upper being positioned widthwise of the welt between the inner and outer portions of said seam.

As herein illustrated the sock lining is in two parts, the combined width of which is somewhat greater than the width of the shoe bottom. The sock lining parts are secured to the welted margin at opposite sides of the forepart of the upper and are laid upon the last bottom after the upper is lasted with the free margin of one member overlapping the free margin of the other. Preferably, the overlapping margins are cemented together and the sock lining thus provided is preferably cemented to the outsole.

The invention will now be described with reference to the accompanying drawing, in which:

Fig. 1 is a perspective view of a sole showing a length of welting cut from the margin at one side of the sole;

Fig. 2 is a cross-sectional view through the forepart of an upper embodying features of the present invention, the upper being shown held in lasted position by the wipers of a pre-welt lasting machine;

Fig. 3 is a cross-sectional view similar to Fig 2 showing a sole spaced above the shoe bottom with its marginal recess positioned to register with the welt; and

Fig. 4 is a perspective view of a completed shoe with part of the upper and part of the shoe bottom broken away.

Referring to Fig. 1, a sole **10** which has been cut to conform to the periphery of the shoe bottom is provided with a recess or rabbet **12** in the margin of its attaching face, said recess extending about the entire extent of the periphery of the sole. The sole **10**, as illustrated in Fig. 4, is a tread sole, or ground-engaging sole. For convenience it will be referred to hereinafter as an outsole. Preferably the outsole is made of grain leather with the grain surface uppermost and the flesh surface providing the tread face. In the formation of the recess **12** a welt **14** is cut from the margin of the grain face of the outsole. As illustrated in Figs. 2 and 3, the welt **14** is relatively thin and tapers widthwise of the welt from its outer edge face **16** to its inner edge **18**. It will be understood that the rabbet **12** formed in the margin of the outsole has the same dimensions as the welt **14**, being the complement thereof. As illustrated in Fig. 3, the formation of the recess **12** in the outsole provides a marginal bevel in said sole the angle of which to the plane of the raised portion **36** of the outsole corresponds to the taper of the welt **14**.

As illustrated in Figs 3 and 4, the welt **14** is secured to the overlasting margin of an upper **20** by a chainstitch seam **22**, as usual in the manufacture of pre-welted shoes. The welt is positioned with its grain surface engaging the outer surface of the upper and providing the exposed face of the welt in the completed shoe. For providing a smooth and comfortable inner surface in the shoe bottom the illustrated shoe has an insole or sock lining herein illustrated as two pieces **24** and **26** of thin material, preferably fabric, which are secured to the welted margin

of the upper prior to the lasting operation by zig-zag seams 28 and 30. The sock lining members extend from the rearward extremity of the shank portion of the shoe forwardly to the inner edge of the welt at the toe end of the shoe. The rear portions of the sock lining members are covered by a heel pad 32 of usual construction. The inner margins 34 (Fig. 2) of the sock lining members overlap and preferably are secured together by cement after the upper has been lasted.

In the manufacture of the illustrated shoe the welt 14 is stitched to the lasting margin of the upper 20, for example by means of a chainstitch sewing machine. After the welt 14 has been secured to the upper and before the upper is mounted on a last the sock lining members 24 and 26 are secured to the welted margin of the upper, preferably by a sewing machine which forms a zig-zag seam such as the seams illustrated at 28 and 30 in Fig. 4. As illustrated in Fig. 3, the outer portions of the seams 28 and 30 extend through the welt, upper, and sock lining members while the inner portions of said seams extend through the welt and sock lining members but not through the upper, the edge of the upper being positioned between the inner and outer portions of said seams. Thus it will be seen that the recess in the center of the shoe bottom enclosed by the inner edge of the welt corresponds in depth to the height of the raised portion 36 (Fig. 3) of the outsole 10 and consequently said raised portion will exactly fill the recess in the shoe bottom and no other filler will be required. The upper lining 21, which is made of thin fabric, may extend to the inner edge of the welt if desired.

In lasting the illustrated shoe the welted margin is worked over the bottom of a last and laid flat on the margin of the last bottom as shown in Fig. 2. It is, of course, necessary in lasting to bring the welt into a position on the last bottom in which it will register with the rabbet 12 in the margin of the attaching face of the outsole 10 when the outsole is positioned for attachment to the shoe bottom, as illustrated in Fig. 3. If the upper is lasted by means of lasting wipers such as the wipers 38 illustrated in Figs. 2 and 3, the positioning of the welt could be effected by providing in the lasting machine adjustable stops for arresting the advancement of the wipers; or alternatively, the welt might be lasted against an abutment member mounted on the last bottom and removable therefrom to permit the sock lining members to be cemented together and the outsole to be secured to the welt. An abutment member suitable for this purpose is illustrated in United States Letters Patent No. 2,060,057, granted November 10, 1936, on an application filed in the name of the present applicant.

After the upper has been lasted and the inner margins of the sock lining members have been secured together the outsole 10 is cement-attached to the welt 14 and preferably also to the sock lining. During the sole-attaching operation the lasting wipers 38 remain advanced to hold the upper in lasted position and to support the outer margin of the welt while the outsole is pressed against it. Preferably the outsole 10 is permanently attached to the welt by any suitable cement. The machine by which the upper is lasted may be provided with sole-laying mechanism such as that illustrated and described in United States Letters Patent No. 2,042,518, granted June 2, 1936, on an application filed in the name of the present applicant. Or, if desired, the outsole may be attached to the welt by stitches or other fastenings.

While the invention is herein illustrated in its application to the manufacture of a type of pre-welted shoe in which the welt is cut from an outsole, it is to be understood that the invention is not thus limited in its scope but is applicable, for example, to the manufacture of welted shoes having molded outsoles made of rubber or other suitable moldable material in which a marginal welt-receiving recess is formed in the molding of the sole. The welt would then, of course, be formed to fit into the welt-receiving recess provided in the sole and it could be made of material such as the sole is made of or of any other suitable material. It will be understood that if the welt and upper are to be permanently secured together by cement the materials of which they are made must be adapted to cement attachment but it is to be remembered that, as previously stated, it is within the scope of the invention to secure the welt and outsole together by stitches or other fastenings if desired, in which case the welt and outsole could be made of any suitable materials without regard to their adaptability for cement attachment. For example, the welt might be made of leather and the sole of rubber.

While the shoe herein illustrated and described is provided with a novel sock lining, the sock lining may be entirely omitted, if desired, without departing from the present invention. It is, of course, obvious that the manufacture of welted shoes in accordance with the present invention, insofar as it relates to the making of the welt and outsole, the lasting of the upper and the attachment of the sole would not be materially altered by the omission of the sock lining members.

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

That method of making prewelted shoes which comprises providing a tread sole having a marginal welt-receiving rabbet defined by an inner shoulder and providing a welt complemental to said rabbet and shaped to register with said rabbet through the length of the latter, securing said welt to the bottom margin of an unlasted upper with the inner margin of the welt extending beyond the edge of the upper, positioning a sock lining member with its outer margin in engagement with the inner surface of the welted margin of the upper and covering the edges of the upper and the welt, and securing the sock lining to the welted margin of the upper by a zig-zag seam the outer portions of which extend through the welt, upper, and sock lining while its inner portions extend through the welt and sock lining but not through the upper, the edge of the upper being positioned widthwise of the welt between the inner and outer portions of said seam.

KARL ENGEL.