Dec. 16, 1941. C. L. WILCOX 2,266,697

SHOE

Filed Sept. 30, 1939

Fig. 1.

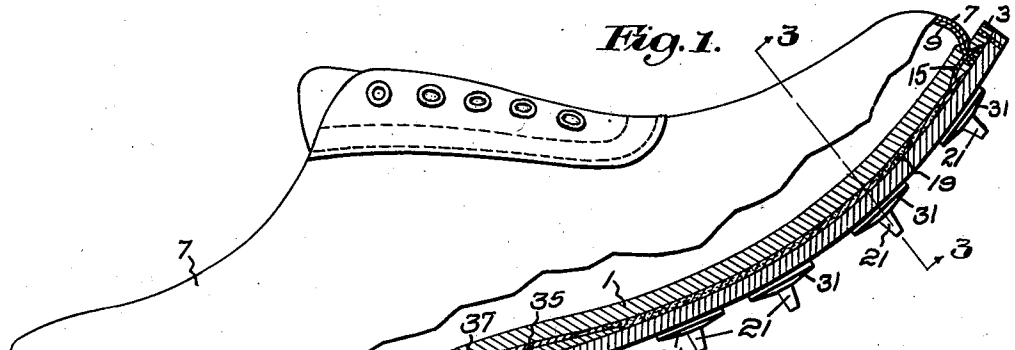


Fig. 2.

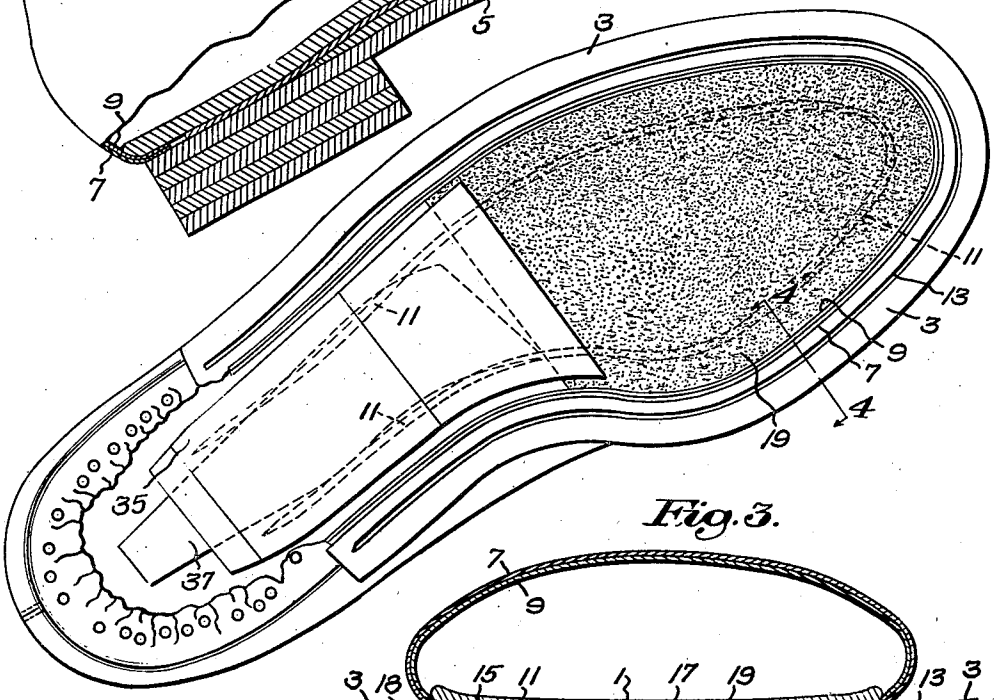


Fig. 3.

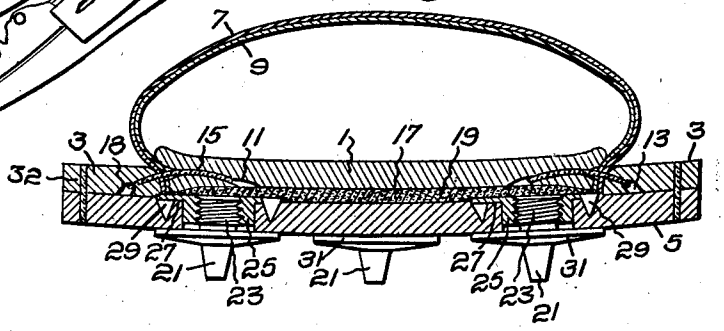
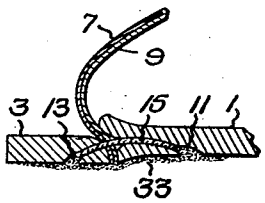


Fig. 4.



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2,266,697

SHOE

Clark L. Wilcox, Brockton, Mass., assignor to Field and Flint Co., Brockton, Mass., a corporation of Massachusetts

Application September 30, 1939, Serial No. 297,294

2 Claims. (Cl. 36—2.5)

My invention relates to shoes, particularly, but not exclusively, to golf shoes provided with calks.

The invention, which has among its objects the provision of a waterproof shoe, and a shoe in which the foot of the wearer is protected from the pressure of the calks if the latter are employed, will be best understood from the following description when read in the light of the accompanying drawing, while the scope of the invention will be more particularly pointed out in the appended claims.

In the drawing:

Fig. 1 is a side elevation of a shoe according to the invention, with parts broken away and parts in section;

Fig. 2 is a plan of the bottom of the shoe before the outsole and heel are applied;

Fig. 3 is a section on the line 3—3 of Fig. 1 on an enlarged scale; and

Fig. 4 illustrates a modification of the shoe according to Figs. 1, 2 and 3, and corresponds to a section on the line 4—4 of Fig. 2 on an enlarged scale.

The shoe illustrated in the drawing is a welt shoe having an insole 1, welt 3, outsole 5, and uppers, which latter comprise an outer upper leather 7 and an inner fabric lining 9. As shown, the insole on its under side is provided with a channel 11, and the welt on its under side with a channel 13, from one to the other of which extend the stitches 15 of the inseam for securing the welt and the marginal edge portions of the uppers to the insole, which marginal portions lie between the adjacent edges of the welt and insole. The construction described provides a cavity 17 between the outsole and insole which receives a filler 19 hereinafter described. Except for this filler, the construction so far described is that commonly employed in a Goodyear welt shoe.

As illustrated, the outsole is provided with replaceable calks 21 having shanks 23 screw-threaded into thimbles 25 carried by the outsole. As shown, the thimbles are provided with flanges 27 resting against the inner side of the insole, which flanges are struck up with teeth 29 pressed into the outsole to prevent turning of the thimbles. When the calks are screwed into the thimbles the outsole is clamped between the flanges 27 of the thimbles and the flanges 31 of the calks.

It has been found that in golf shoes, particularly after they have been worn for a time, or are of light construction, or when the outsole or both the outsole and insole become softened on account of being subjected to moisture, the pressure of the calks tends to injure, or cause discomfort to, the foot of the wearer of the shoe. In the present invention this action is prevented by placing in the cavity 17 of the shoe a filler 19 of sufficient hardness to prevent the pressure of the calks from being imparted through the insole to the foot of the wearer, it being understood that the usual insole, although to some extent stiff and hard, does not have the same stiffness and hardness as the usual dry outsole, and that neither under the conditions above mentioned will effectively relieve the foot of the wearer from the pressure of the calks, particularly if the wearer steps on a stone or other hard obstruction or if the calks tend to cant. This filler also is preferably waterproof, and acts to waterproof the insole, in which respect it is useful in situations where no calks are employed.

As a suitable filler I preferably employ a fabric of woven material such as thick cotton cloth which may, if desired, be of several plies, or of structureless material such as felt or matted cellulose fibers, in either case the material being impregnated with stiffening substance which preferably is of such nature as to waterproof the filler.

This filler may be made by taking a sheet of the fabric and dipping it in a solution or dispersion of substance insoluble in water so as to impregnate it with the solution or dispersion. The fabric as soon as it is impregnated with the solution or dispersion may be removed from the vessel containing the latter, and then immediately and before it dries be placed in water so that the water may displace the solvent liquid and precipitate the dissolved or dispersed substance. This dissolved or dispersed substance of the impregnating solution or dispersion may, for example, be of such material as nitrocellulose, or various gums such as manila, copal, kauri, sandarac, or common resin, all of which are insoluble in water, and may be dissolved or dispersed in a suitable liquid medium such as alcohol, acetone, ether, ammonia solution, etc., depending upon in which the particular material is soluble. Reclaimed Celluloid dissolved in ethyl alcohol, or nitrocellulose dissolved in acetone, to make a solution having the consistency of ordinary thin varnish will give satisfactory results. The hardness of the final product present in the shoe may be controlled by dissolving into the solution small amounts of ordinary or refined resin. After the liquid contents of the impregnating solution are displaced by water the substance is precipitated in substantially colloidal form throughout the

interstices of the cloth, felt, or the like. The material so treated may then be squeezed and dried to remove any residual liquid.

The dried sheets above described are non-tacky and porous and may be readily cut to the desired outline of the filler, preferably by use of a die, and the blanks so formed skived at their edges to fit the cavity 17 properly, the presence of the precipitated substance acting to prevent raveling or the like which would otherwise occur with untreated cloth or the like were it attempted to cut and skive it. The blanks then may be dipped in a suitable mulling liquid consisting of a solvent for the precipitated particles as, for example, where reclaimed Celluloid is used the mulling solution may be ethyl alcohol, or a mixture of toluol and ethyl alcohol, and, if desired, may contain a small amount of acetone to secure quick drying. The action of the solvent causes the finely divided precipitated particles almost instantly to coalesce and the sheet or blank to be resolved into a flaccid tack body which may be placed in the cavity 17 so as to conform and adhere to the insole, it being noted that the coalesced particles at the surface of the filler act as a water insoluble cement for securing it to the insole. When the applied blank dries it will become non-tacky and water impervious and will retain the shape into which it has been pressed in the cavity, and, although of sufficient flexibility to permit its use as a filler, will be of sufficient stiffness and hardness to prevent the pressure of the calks being imparted to the foot of the wearer.

After the filler has dried the outsole may be placed in position and sewed to the welt as indicated by the outseam stitches 32 in Fig. 3. The outsole preferably is in non-adhering relation to the filler sheet so that the shoe will not be unduly stiffened and worn soles may be readily replaced.

It will be observed that, as illustrated, the filler covers the channel 11 of the insole for substantially the entire surface of the insole between the edges thereof at the ball and toe portions of the shoe, and thus waterproofs those portions of the insole. If further waterproofing is desired the lower surfaces of the welt and exposed edges of the upper leather and lining may be covered with a thin layer of flaccid non-tacky waterproofing substance such as Celluloid or other nitrocellulose base material dissolved in sufficient volatile solvent such as ethyl alcohol, which solution also contains a suitable plasticizer such as di-ethyl-phthalate or castor oil dissolved therein, and, if desired, a small amount of amyl acetate to cause the solution when applied to penetrate the surfaces. The solution may be mixed to have the consistency of ordinary varnish so that it may be applied with a brush. When applied it will penetrate and strongly adhere to the leather and impregnate the exposed portions of the inseam stitches 15 and edges of the upper leather and lining, forming, for example, a layer 33 shown as of exaggerated thickness in Fig. 4. This layer, if desired, may extend over and fill the channel 11 as well as the channel 13. After the layer 33 is dried the filler may be applied, and after that is dried the outsole may be applied, so that the outsole is not adhesively secured to either the filler or the layer 33. The mulling liquid employed for treating the filler preferably is also a solvent for the layer 33 so that the filler will be united thereto when it partially covers it. For example, if the filler sheet is impregnated with nitrocellulose the mulling solution may be ethyl alcohol.

In practice the layer 33 may extend for the entire length of the welt, or only over the portions thereof at the ball and toe portions of the shoe where the latter is most subjected to moisture when in use.

It will be observed that, as the material of which the filler is made may be readily skived before mulling it, it may be readily shaped to make a proper fit with adjacent parts as, for example, the forward end of the stiff leather cover 35 for the metallic shank stiffener 37, as illustrated in Figs. 1 and 2.

It will be understood that, within the scope of the appended claims, wide deviations may be made from the form of the invention herein described without departing from the spirit of the invention.

I claim:

1. A shoe having, in combination, an insole, a welt secured to the insole, an outsole secured to the welt, said insole and outsole being of material, such as leather, subject to softening when subjected to moisture, calks carried by the outsole having flanges resting against the outer surface of the outsole, and a combined filler and calk-pressure resisting layer spacing the outsole from the insole at the fore part only of the shoe and extending over substantially the entire area of the insole at the ball and toe portions thereof, said layer being in cemented adhering relation to the insole but in non-adhering relation to the outsole so as to minimize that decrease in flexibility of the fore part of the shoe which the layer tends to cause, said layer being of sheet fibrous material impregnated with a waterproofing, stiffening and hardening substance for protecting the insole from softening by moisture and for making it of sufficient stiffness and hardness to relieve the insole of longitudinal pressures on the calks and pressures of said flanges upon canting of the calks when the outsole wears or is softened by moisture.

2. A shoe according to claim 1 in which the welt is sewed to the insole by means comprising a channel for the inseam at the under side of the insole, the combined filler and calk-pressure resisting layer extending over said channel for waterproofing the inseam.

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