

Aug. 21, 1945.

J. H. EVERSTON

2,383,052

SHOE

Filed June 26, 1943

3 Sheets-Sheet 1

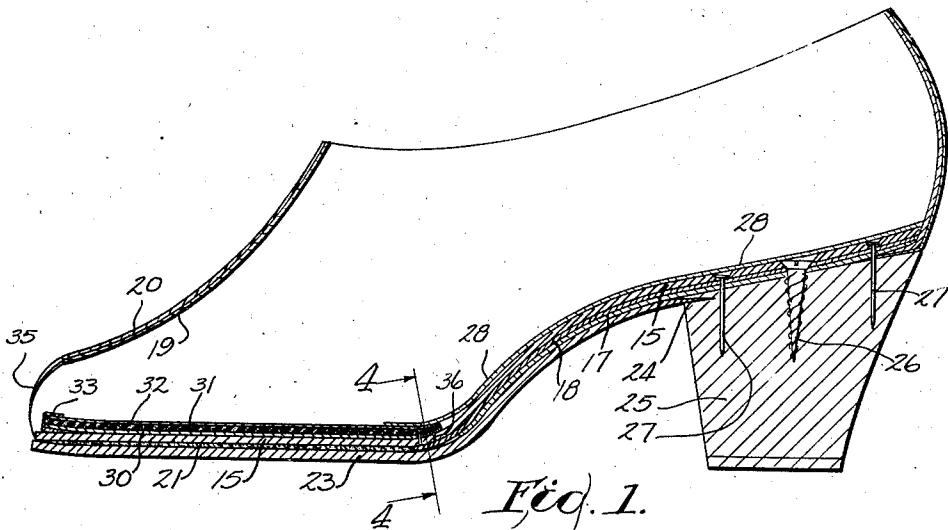


Fig. 1.

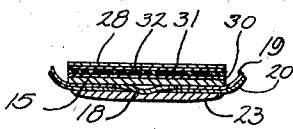


Fig. 4.

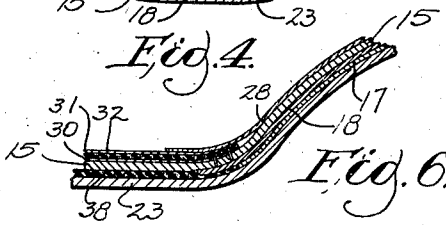


Fig. 6.

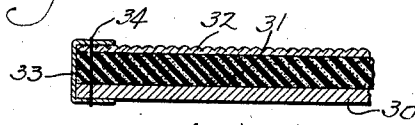


Fig. 5.

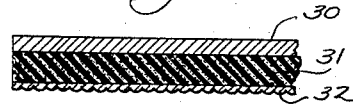


Fig. 7.

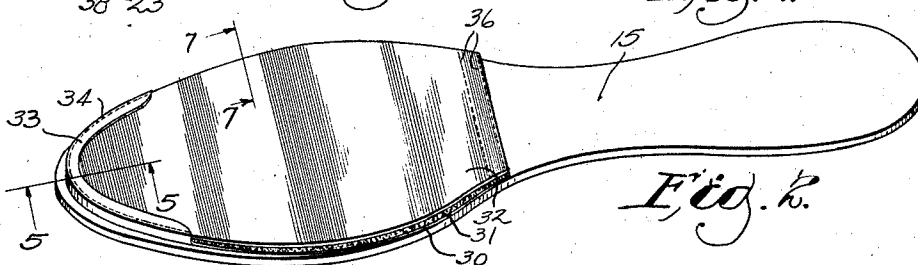


Fig. 2.

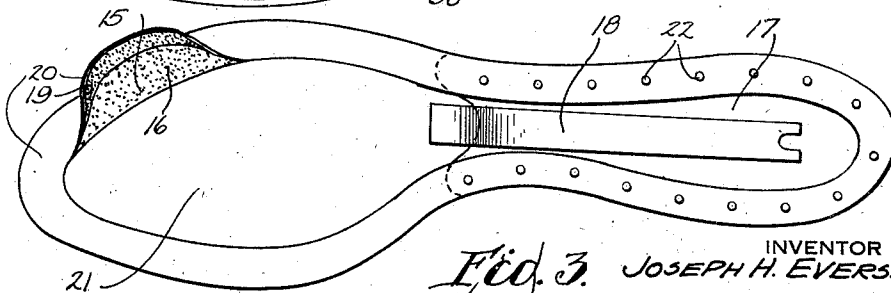


Fig. 3.

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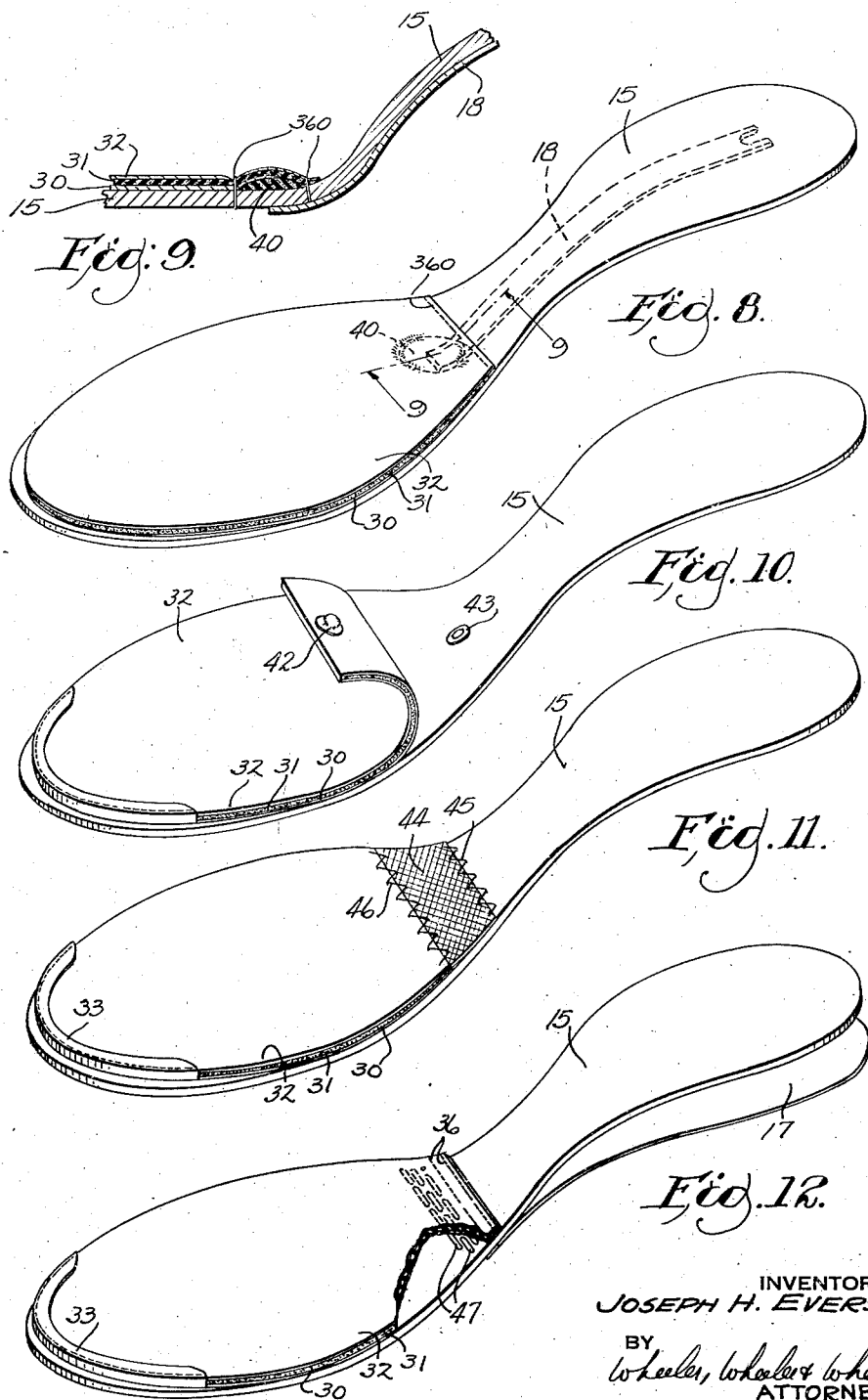
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3 Sheets-Sheet 2



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3 Sheets-Sheet 3

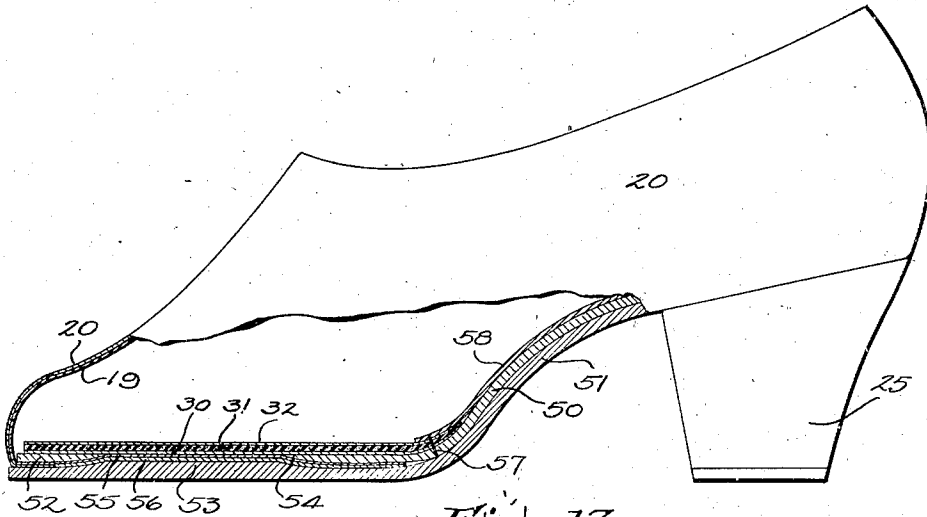


Fig. 13.

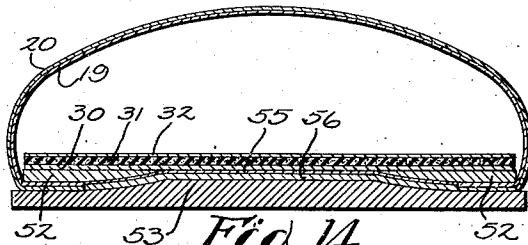


Fig. 14.

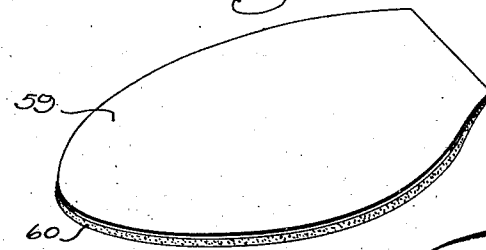


Fig. 15.

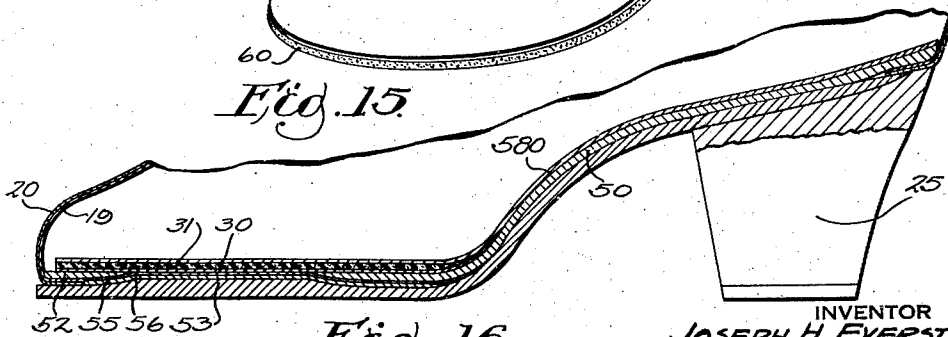


Fig. 16.

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UNITED STATES PATENT OFFICE

2,383,052

SHOE

Joseph H. Everston, Milwaukee, Wis.

Application June 26, 1943, Serial No. 492,340

13 Claims. (Cl. 36—19.5)

This invention relates to improvements in shoes. The invention, in most of its aspects, has particular reference to the type of shoe in which there is a glider ply which floats or slides upon the upper surface of the insole. The present application is a continuation in part of, and a substitute for, my application of the same title filed April 8, 1943, Serial No. 482,256.

One of the broader objects of the invention is the provision of a practicable form of shoe in which a prefabricated floating, gliding unit can successfully be used in a shoe of cement lasted construction.

I regard it as desirable that the prefabricated glider ply unit incorporate a cushion ply and one or more coextensive plies of fabric, fiber, leather or plastic, the whole assembly being secured as a unit to the insole at or near the shank, and preferably at the juncture of the shank with the ball or forepart of the shoe.

For the purposes of some embodiments of the invention, there are important advantages in having the insole continuous from one end of the shoe to the other. From the standpoint of some embodiments of the invention, there are important advantages in having the thickness of the insole approximately uniform throughout the length of the shoe, particularly in that area of the insole to which the upper and lining are lasted (with the possible exception of skiving). In several embodiments of the present invention, it is not necessary to split or otherwise impair material used in the insole; in all embodiments of the invention, the prefabricated cushioned glider unit is fastened to the shoe in such a way as to be entirely comfortable to the wearer.

There are many more specific objects of the invention, including the application of a fractional binding to the toe portion of the cushioned glider unit (this being particularly ornamental for open toed shoes but performing a mechanical function in securing the several plies unitarily together at the toe); the provision of means whereby the glider unit may be made detachable if desired; the provision of a glider unit in which the connection at the shank of the shoe provides orthopedic support; the provision of means whereby the shank stiffening metal reinforcement is enclosed at its lower end between upper and lower cushioning means whereby it is prevented from cutting either the insole or the outsole; the provision of means for facilitating the sliding action of the glider unit and assuring its movement with the feet; and many other objects

which will be apparent to those skilled in the art from the following disclosure of the invention.

In the drawings:

Fig. 1 is a longitudinal vertical section through a lady's shoe embodying the invention in its preferred form.

Fig. 2 is a view in perspective of the insole and attached glider unit assembly as it appears as a separate article of manufacture for use in the shoe of Fig. 1.

Fig. 3 is a plan view of an inverted shoe as it appears during lasting before the outsole is applied, a portion of the upper and lining being turned up to expose the cement-treated insole.

Fig. 4 is a detail view taken in cross section in the plane indicated in 4—4 of Fig. 1.

Fig. 5 is an enlarged detail view in longitudinal section through the forward end of the glider unit.

Fig. 6 is a view in longitudinal section near the shank of the shoe illustrating a slight modification of the structure shown in Fig. 1.

Fig. 7 is a view of a modified glider unit as it would appear fragmentarily if viewed in section in the plane indicated at 7—7 in Fig. 2.

Fig. 8 is a view in perspective showing a somewhat modified glider unit and insole assembly.

Fig. 9 is a fragmentary detail view on an enlarged scale taken in section on the line 9—9 of Fig. 8.

Figs. 10, 11 and 12 are views in perspective showing further modified embodiments of the sub-assembly comprising the glider unit and insole, Fig. 10 showing a detachable glider unit partially turned back to expose the connection, and Fig. 12 showing the glider unit partially broken away to expose the underlying portion of the insole.

Fig. 13 is a view in longitudinal section through a shoe embodying this invention and exemplifying a slightly modified construction illustrating the application of the invention to the Sbicca construction.

Fig. 14 is a view on an enlarged scale taken in transverse section through the shoe of Fig. 13.

Fig. 15 is a detail in perspective showing a two ply glider unit which may be used in any of the shoe constructions herein disclosed.

Fig. 16 is a view similar to Fig. 13 showing a further modified embodiment of the invention in which the top ply of the prefabricated glider unit is extended rearwardly to comprise the sock lining and serve as a means of fastening the prefabricated glider unit into the shoe.

Like parts are identified by the same reference characters throughout the several views.

In the shoe illustrated in Figs. 1 to 5, the insole 15 is continuous from one end of the shoe to the other and, except as skived somewhat at 16, is substantially of uniform thickness throughout. From the shank rearwardly, the insole is preferably stiffened by a fiber shank stiffening piece 17 along which there may extend a metal reinforcing member 18. This member may be between the piece 17 and the insole 15 (as in Fig. 1) or it may lie beneath piece 17 between such piece and the outside (as in Fig. 3).

I prefer to fasten the lining 19 and upper 20 to the insole by cement, at least throughout the forward portion of the shoe, the lining and upper being lasted over the skived marginal portion 16 and cemented down as indicated in Fig. 3, wherein the stippling applied to that portion of the shoe in which the lining and upper are raised is intended to represent the cement.

It will be found possible, if the insole is marginally skived, to leave the lasted upper substantially flush with the bottom of the insole, but in so far as there is any difference in level, the customary filler may be used at 21. At the shank and heel portions of the shoe, the upper and lining are preferably lasted by tacking at 22 to the fiber stiffening piece and the insole. The outsole 23 is preferably cement lasted in place. According to present practice, it may terminate in a skived margin 24 inserted into a notch at the forward thrust of the heel 25. A screw 26 and nails at 27 through the insole into the heel will serve to retain the heel. The screw and nailheads may be covered by the usual sock lining at 28 which preferably extends forward over the shank portion of the shoe sufficiently far to cover the connection with the insole of the glider unit hereinafter to be described.

The gliding unit floats on the insole in the forepart of the shoe, being connected with the insole only at the shank. It preferably, though not necessarily, incorporates a cushion. Where a cushion is used, special care is necessary to assure free movement of the gliding unit on the sole so that under the wearer's weight it will move with the wearer's foot instead of adhering to the sole.

For many reasons, the gliding unit should be fabricated independently of the insole. In the first place, when so fabricated, it can more readily be constructed to assure its independent sliding movement upon the insole under load. In the second place, by prefabricating the gliding unit, the insole may be of standard construction. In the third place, it is important to the production of shoes of this character by commercial methods that the insoles, as well as the gliding units, be separately die cut. Since they are necessarily of differing length, they cannot both be die cut unless they are separately fabricated. Accordingly, the present invention differs from prior attempts to provide sliding surfaces in the forepart of a shoe in that the present invention contemplates separately fabricating a gliding unit and thereafter stitching or otherwise fastening it to the upper surface of the insole. The assembly may constitute a separate article of manufacture, as will now be described.

The gliding unit incorporated in the present shoe comprises a glider ply at 30 which rests upon and slides upon the upper surface of the insole. Mounted on this is a substantially co-extensive cushion 31 and on top of the cushion is a substantial coextensive finishing ply 32. At least two plies are desirable.

In the initial prefabrication of this unit, the

only connection between the several plies may be a piece of binding tape 33 and the stitching 34 which holds such tape in place, as best shown in Figs. 1, 2 and 5. This tape may extend only around the toe portion of the unit. It finishes off the unit in such a way as to give it an attractive appearance when viewed through an opening 35 in the upper 20 at the toe of the shoe.

The fabric used at 32 to constitute finishing ply of the glider unit may desirably comprise the fabric known commercially as "faillie," preferably having the ribs disposed transversely, as indicated in Fig. 5, so that the engagement of the ribs with the bottom of the wearer's foot will assure the movement of the glider unit with the foot, sliding upon the insole 15. The glider unit is materially shorter than the insole, as clearly indicated in Fig. 1, so as to leave room for the sliding action. Upon completion of the glider unit, it may be fastened to the insole 15 by transverse stitching at 36. Either the tension of the stitching should compress the cushion 31 or the glider unit should be skived at its rear margin to reduce its thickness so that it tapers off as the insole rises at the shank of the shoe. It will be noted that the metal reinforcing member 18 extends below the cushion provided by the gliding unit before the end, while the sock lining overlaps the glider unit.

It is possible to invert the glider unit, having the glider ply 30 uppermost and the fabric ply 32 resting upon the insole. This is illustrated in Fig. 7. If this is done, the ribs of the faille fabric (assuming faille fabric to be used) should preferably run longitudinally of the shoe, as indicated in Fig. 7 instead of transversely thereof as indicated in Fig. 5. Each rib will thereupon act as a runner to facilitate the sliding of the glider unit upon the insole.

If the insole is not skived before the lining and upper are lasted about it, as indicated in Fig. 3, there will be more space between the insole 15 and the outsole 23. This arrangement is shown in Fig. 6. The additional space made available in this manner accommodates a second cushion at 38 which may be extended below the end of the metal reinforcing member 18. Thus the cushion 38 protects such member from cutting through the outsole 23 while the cushion 31 of the glider unit prevents the end of the metal member 18 from being perceptible to the foot of the wearer of the shoe. It is deemed advantageous to have the end of the metal reinforcing member confined between upper and lower cushions, whether such member is above or below piece 17.

The construction shown in Figs. 8 and 9 is generally similar to that illustrated in Figs. 2 and 1 except that a metatarsal button is incorporated at 40 between the central portion of the insole 15 and the superimposed portion of the glider unit which comprises glider ply 30, cushion 31 and finishing ply 32. As best shown in Fig. 8, the stitching at 360 which connects the glider unit to the insole starts at the side of the assembly and makes a circuit about the metatarsal cushion 40, thence passing tangentially to the other side of the assembly. Where stitching thus passes through the cushion of a glider unit and is tightened under substantial tension, a metatarsal support is provided by the bulging of the cushion 31 within the stitching, even if the supplemental button 40 is absent. Where the button is present, the stitching augments the effect. At the same time, the cushion or cushions are preferably located immediately over the end of the reinforcing mem-

ber 18, thereby further rendering such member imperceptible to the wearer's foot.

In many constructions, it is desirable that the connection between the glider unit and the insole be such that the glider unit need not be inserted until after the shoe is completed and may be removed at any time for cleansing or airing. There has heretofore been no convenient way of keeping clean the surfaces contacted by the wearer's hosiery in open toed shoes. By employing a flat type of glove fastener connection including the post portion 42 mounted in the glider unit and the socket portion 43 in the insole, as indicated in Fig. 10, the wearer may at any time remove the glider unit either permanently or to clean the surfaces contacted by the wearer's hosiery in the forepart of the shoe, or to replace it with another.

In the construction shown in Fig. 11, a piece of flexible ribbon 44 is marginally stitched at 45 to the insole and marginally stitched at 46 to the glider unit to provide a flexible connection. While this does not permit the ready removal of the glider unit, it does facilitate turning the glider unit back in the shoe to expose its face. It also facilitates the free movement of the glider unit upon the forward portion of the insole.

I have found that a maximum of freedom of movement of the glider unit upon the insole occurs when the flexibility of the insole is increased at the shank with reference to its flexibility in the forepart of the shoe. When the shoe is worn, the bending tends to occur at the shank, causing very substantial movement of the glider unit forwardly upon the insole each time the insole is flexed. To accomplish this result, I prefer to weaken the insole by providing transverse rows of slits at 47, as indicated in Fig. 12, such slits being confined to the portion of the shoe immediately adjacent the connection of the glider unit with the forward shank, such connection being achieved in any desired way. As illustrated, the connection is made by stitching 36, as in the disclosure of Fig. 2.

Also illustrated in Fig. 12 is a feature that may be incorporated in the devices shown in any one of the other views; the article of manufacture which comprises the insole and the gliding unit also includes a stiffening ply 17 attached to the assembly by the stitching 36, the stitches extending through the gliding unit and also through the insole 15 to engage the stiffening piece 17.

In Figs. 13 and 14, I have illustrated a shoe of the Shicca construction incorporating my invention.

In this construction, as is well known, a skeleton insole 50 is split from the outsole 51 at the shank and heel and includes a rand portion 52 split from the outsole 51 about the ball portion 53 of the outsole, such ball portion being left the full thickness of the blank from which the two soles are formed. The insole throughout the heel and shank portion and the rand portions to which the upper 20 and lining 19 are lasted is of substantially uniform thickness and is continuous from end to end of the shoe. Where the rand runs out at the ball of the shoe, it is, of course, skived at 54 to reduce its thickness complementarily to the gradually increasing thickness of the outsole at the ball portion 53.

I prefer to incorporate between the insole and the outsole, and extending across the ball portion 53 of the outsole to span the insole opening, one or more plies of material preferably comprising a ply 55 of some fibrous material of substantial strength and at 56 a ply of felt or the like as a

filler. Either or both of the plies 55, 56, may be omitted, if desired. These two plies approximate the thickness of the intumed margins of the lining and upper and consequently assure a relatively flat surface for the insole and an absence of any perceptible ridge where the skived inner margin of the insole laps the full ball portion 53 of the outsole.

Upon the bed thus formed, comprising the rand of the insole and the plies 55 and 56 where these cross the ball portion of the outsole, I mount my prefabricated glider unit. In this particular construction, the prefabricated glider unit may constitute a top ply of fabric or the like, an intermediate cushion ply and a bottom ply of fiber or the like, it being understood that other materials may be substituted. The prefabricated unit may be secured at its skived rear portion adjacent the shank of the shoe by the stitching at 57 and this may, if desired, be lapped by the sock lining 58.

As suggested in Fig. 15, any one of the gliding units used in the various constructions herein disclosed may comprise only two plies whereof the top ply 59 would constitute leather, fiber, plastic or fabric and the lower ply 60 would comprise a cushion. In this construction, the deformation of the cushion, rather than any lack of friction between the glider unit and the insole, would permit relative movement between at least the top ply of the glider unit and the sole structure of the shoe.

The construction shown in Fig. 16 is very similar to that shown in Fig. 13, but the sock lining 580 in the Fig. 16 construction is continuous from end to end of the shoe, constituting the top ply of the prefabricated glider unit. Since the sock lining is cemented to the heel and shank portions of the insole 50, it thus serves as a means of securing the glider unit into the shoe at the shank portion.

In all of the various constructions embodying this invention, the insole is preferably continuous and of substantially uniform thickness throughout (except where skived marginally). This is important to the construction of a sturdy and well built shoe of the type illustrated. Yet it is possible, in such a shoe, to provide a glider unit because the said unit is separately fabricated and later connected to the insole between the shank and the forepart. The relationship between the cushion and the glider unit and the shank reinforcement is advantageous in all of the constructions shown and not only gives longer life to the shoe by protecting the insole and outsole from the shank reinforcement, but also makes the shoe more comfortable and enhances the metatarsal support.

No particular materials are required. The outsole and the insole will usually be made of leather, but rubber, fiber or composition may be substituted. Similar materials may be used to make up the gliding ply 30, or plastics may be used for this purpose, it being desirable that whatever material is employed should be sufficiently stiff and have a sufficiently low coefficient of friction upon the insole so that it will slide under the weight of the wearer's foot without tending to buckle or wrinkle.

I have found that the action of the shoe is much improved where the connection between the gliding unit and insole is made close to the juncture between the shank and forepart of the insole. Rearwardly of this point, the shank stiffening means prevents the insole from yield-

ing greatly. Most of the flexing of the shoe during walking occurs immediately ahead of the end of the shank stiffening means. Accordingly, the connection of a glider unit to the insole at or immediately adjacent this point creates a maximum of the desired sliding movement.

It will, of course, be understood by those skilled in the art that the various features disclosed herein are interchangeable. The metal reinforcement used as a part of the shank stiffening means may be located either above or below the fiber shank stiffener, or omitted entirely, as desired. The metatarsal button shown in Figs. 8 and 9 may be used in any of the other constructions, as may the glove fastener type of connection illustrated in Fig. 10, or the flexible band 44 of Fig. 11, or the transversely slit insole, or attached stiffening piece 17 illustrated in Fig. 12, all of these constructions being usable optionally in the shoe of Fig. 1.

I claim:

1. In a cement lasted shoe, the combination with an insole, an upper lasted about said insole throughout the shoe and cemented to the insole at the forepart, and an outsole cemented beneath the insole and upper, of a prefabricated glide unit resting free on the insole at the forepart of the shoe and comprising a cushion ply and at least one other ply, said unit having a rear terminus at the shank, and stitching extending transversely of the insole through all of said plies and connecting the rear terminus of said unit to the insole at the shank.

2. The shoe of claim 1, including, in further combination, a binding tape extending about the margins of the several plies of the glide unit, at least at the toe.

3. In a cement lasted shoe, the combination with an insole, an upper lasted about said insole throughout the shoe and cemented to the insole at the forepart, and an outsole cemented beneath the insole and upper, of a prefabricated glide unit resting free on the insole at the forepart of the shoe and comprising top and bottom plies and an intervening cushion, and stitching through all of said plies connecting said unit to the insole at the shank under tension sufficient to taper the thickness of the glide unit at the shank, and a sock lining extending from the heel and lapping said unit at the shank over said stitching.

4. In a shoe having an insole, the combination therewith of a separately prefabricated glide unit positioned on the insole in the forepart of the shoe and fastened to the insole at the shank immediately adjacent the forepart, said unit comprising a cushion ply and at least one other ply, shank stiffening means including a metal member underlying the insole from the heel beneath the shank, an upper cement lasted marginally about the insole at the forepart, a cushion filler beneath the insole and within the lasted margins of the upper, and an outsole cement lasted to said upper margins, the said member tending above the cushion filler and beneath the cushion of the glide unit whereby to be cushioned both upwardly and downwardly.

5. The assembly of claim 1, wherein the insole is more flexible immediately forwardly of the connection of the glide unit therewith than elsewhere throughout the forepart of the insole.

6. A shoe comprising an insole having a toe, a forepart, a shank, and a heel portion, in combination with an upper and a lining cement lasted about the margin of the forepart of the

insole, shank stiffener means underlying the heel and shank of the insole, the upper and lining being tack lasted to the insole and said means at the shank and heel portion, a sole and heel applied below the insole and the lasted portions of the lining and upper, said sole being cemented to the upper, and a prefabricated glide unit in the shoe free of the insole forepart to and from the toe and connected to the insole adjacent the juncture of shank and forepart, said unit comprising top and bottom plies and an intervening cushion, the bottom ply being freely slidable on the insole and the top ply being transversely ribbed to increase the positive engagement of the wearer's foot therewith.

7. A shoe comprising an insole having a toe, a forepart, a shank, and a heel portion, in combination with an upper and a lining cement lasted about the margin of the forepart of the insole, shank stiffener means underlying the heel and shank of the insole, the upper and lining being tack lasted to the insole and said means at the shank and heel portion, a sole and heel applied below the insole and the lasted portions of the lining and upper, said sole being cemented to the upper, and a prefabricated glide unit in the shoe free of the insole forepart to and from the toe and connected to the insole adjacent the juncture of shank and forepart, the upper being open at the toe and the unit having a marginal binding at its toe portion.

8. A shoe comprising an insole having a toe, a forepart, a shank, and a heel portion, in combination with an upper and a lining cement lasted about the margin of the forepart of the insole, shank stiffener means underlying the heel and shank of the insole, the upper and lining being tack lasted to the insole and said means at the shank and heel portion, a sole and heel applied below the insole and the lasted portions of the lining and upper, said sole being cemented to the upper, and a prefabricated glide unit in the shoe free of the insole forepart to and from the toe and connected to the insole adjacent the juncture of shank and forepart, the unit lapping the shank stiffening means, and a sock lining extending from the heel portion of the insole lapping the said unit.

9. A shoe comprising an insole having a toe, a fore part, a shank, and a heel portion, in combination with an upper cement-lasted about the margin of the fore part of the insole, shank stiffener means underlying the heel and shank of the insole, the upper being lasted to the insole and said means at the shank and heel portion, a sole and heel applied below the insole and the lasted portions of the upper, said sole being cemented to the upper, and a prefabricated glide unit connected to the insole adjacent the juncture of shank and fore part and comprising top and bottom plies and an intervening cushion and a binding about at least a part of the margins of said plies, the unit lapping the stiffener means at the shank, and the connection between the unit and the insole comprising transverse stitching extending through the several plies of the unit under tension sufficient to reduce the thickness of the unit at its rear end; together with a sock lining extending from the heel of the shoe and lapping the unit.

10. The shoe of claim 1 in which shank stiffening means is laminated with the insole at the shank and the prefabricated glide unit is connected by said stitching not only with the insole but with said shank stiffening means.

11. The shoe set forth in claim 3 in which the insole is a skeleton insole having a central opening, the sole and insole being complementarily formed from a single blank, and the prefabricated glide unit spanning the opening in the insole.

12. The shoe set forth in claim 1 in which the outsole has a full thickness ball portion and is of reduced thickness marginally at its fore part and throughout its shank and heel portions, the insole having an opening complementarily to the ball portion of the outsole and having a rand extending about the reduced thickness marginal and shank and heel portions of the outsole.

13. The shoe set forth in claim 3 in which the

5 outsole has a full thickness ball portion and is of reduced thickness marginally at its fore part and throughout its shank and heel portions, the insole comprising a skeleton insole having an opening complementarily to the ball portion of the outsole, and a rand extending about the reduced thickness marginal portion of the outsole, the insole overlying the shank and heel portion of the outsole, the prefabricated glide unit spanning the opening in the skeleton insole, together with at least one ply of material marginally underlying the rand of the insole and spanning the ball portion of the outsole between the ball portion and the glide unit.

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