Sept. 19, 1939. J. M. WHELTON 2,173,189

SHOE BOTTOM UNIT

Filed Aug. 11, 1937

Fig. 1.

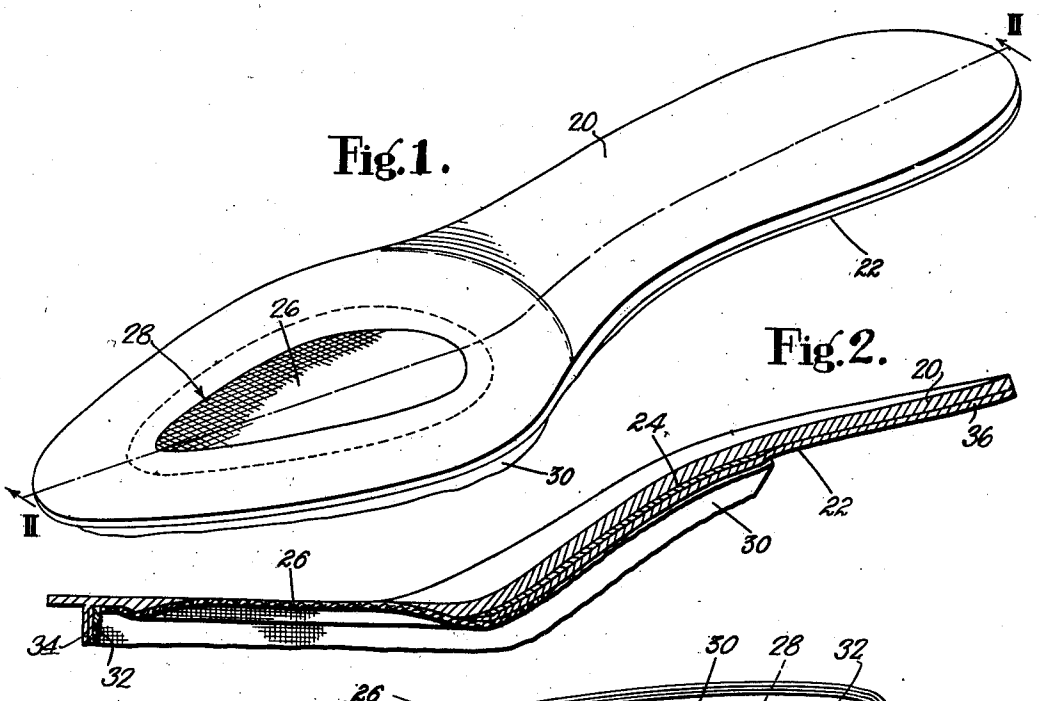


Fig. 2.

Fig. 3.

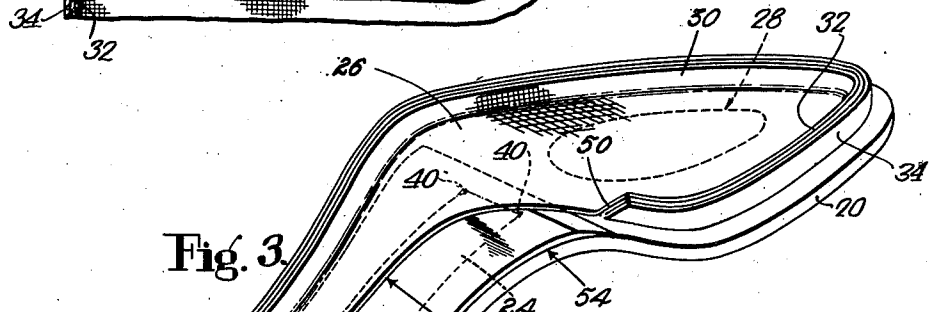
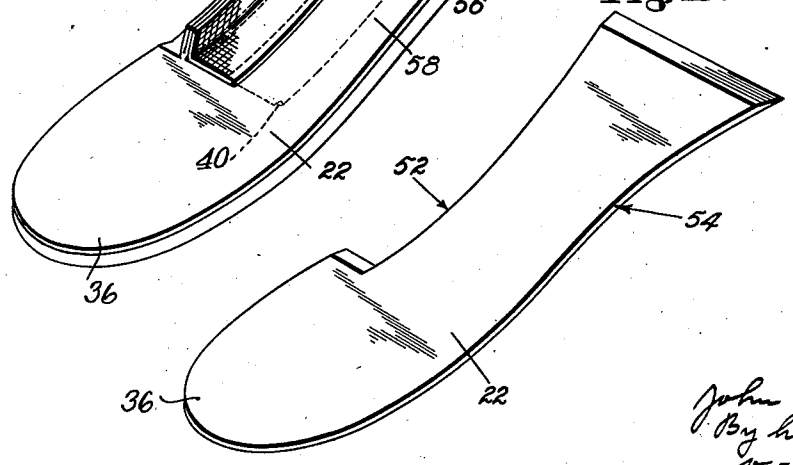


Fig. 4.



INVENTOR

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UNITED STATES PATENT OFFICE

2,173,189

SHOE BOTTOM UNIT

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Application August 11, 1937, Serial No. 158,545

3 Claims. (Cl. 36—22)

This invention relates to improvements in shoe bottom units and more particularly to so-called reinforced insole units of the type wherein the shank and heel portions of the insole are reinforced to impart the required stiffness thereto while the forepart is left unstiffened to facilitate the securing of the desired flexibility in the forepart of the shoe. The invention is herein illustrated in its application to insole units having sewing ribs adapting the units for use in the manufacture of welt shoes. The invention is also applicable, however, to lipped insole units for use in the manufacture of cement-lasted shoes such, for example, as that disclosed in United States Letters Patent No. 1,932,545, granted October 31, 1933, upon application of George Goddu, or other types of shoes wherein the insole lip is to be utilized as a lasting lip and the outsole is to be secured directly to the overlasted margin of the upper as by means of through-and-through stitches or by cement. While not restricted thereto the invention is also herein disclosed in its application to an insole having a skeletonized forepart and involves the use of a flexible reinforcing piece for the forepart of the insole, this flexible piece being characterized by having an upturned marginal portion for reinforcing the sewing rib or lasting lip.

The invention, as illustrated, provides an insole unit comprising a skeleton insole having the usual central opening in its forepart, and having a marginal sewing rib or lasting lip which is formed integral with the material of the insole, a fabric reinforcement in the forepart of the unit which will not interfere with the maintaining of the desired flexibility in that region and which will function also to reinforce the sewing rib or the lasting lip, and reinforcing members arranged to impart the requisite stiffness to the heel and shank portion of the unit and to preserve the same in the desired last conforming shape. The illustrated members for reinforcing the shank and heel portion of the unit comprise a relatively narrow metallic shank stiffener strip and a stiff reinforcing piece of fiberboard or the like which is coextensive with the heel portion of the insole and is shaped to cover substantially the sank portion of the insole without, however, interfering with the sewing rib or lasting lip and which covers the stiffener strip so as effectively to prevent the latter from interfering with the lasting operation. As shown, the sewing rib or lasting lip extends entirely around the forepart and along one lateral margin of the shank of the insole. As shown, also, the shank stiffener strip and the heel and shank reinforcing piece is applied to the lower side of the insole.

The invention will be explained with reference to the accompanying drawing, in which

Fig. 1 is a perspective view of an insole unit embodying my invention, the view showing the upper or foot side of the unit;

Fig. 2 is a sectional view taken along the line II—II of Fig. 1;

Fig. 3 is a perspective view of the unit showing the lower side thereof; and

Fig. 4 is a perspective view of the heel and shank reinforcing piece employed in the unit.

Referring to the drawing, the improved insole unit shown therein is adapted for use in a shoe in which the outsole is attached to a welt in the forepart and along the outer side only of the shank and is attached by cement or through-and-through fastenings along the inside marginal portion of the shank. The illustrated insole unit comprises a full length insole **20** of relatively flexible material, such as leather, a relatively stiff heel and shank reinforcing piece **22** of fiberboard or similar material, a metallic shank stiffener **24**, and a flexible reinforcing piece **26** of canvas or the like. The illustrated insole **20** is a skeleton insole having a central forepart opening **28** adapted to receive a complemental forepart projection or island formed upon an outsole (not shown) in accordance with a practice well known in the manufacture of shoes with flexible foreparts. To adapt the insole **20** for use in the manufacture of welt shoes of the particular type above referred to the insole is provided with a marginal sewing rib **30** which extends along the outside shank of the insole and around the forepart but terminates in the vicinity of the break line at the inner lateral margin of the insole, as indicated at **50** in Fig. 3. As shown, the sewing rib **30** comprises inner and outer channel flaps **32** and **34** which are formed integrally with the insole by the customary operation of cutting inner and outer channels in the flesh side of the insole, raising the channel flaps into upstanding position and (preferably) cementing them together. The heel and shank reinforcing piece **22** is shaped, by a die cutting operation or otherwise, to provide a heel portion **36** coextensive with the heel portion of the insole **20** and a shank portion **58** of a size and shape to cover all of the shank portion of the insole except at the outer margin thereof where the rib **30** is located, the outer marginal portion of the reinforcing piece **22** being cut away, as indicated at **52**, so as to avoid interference with

the rib 30. As indicated at 54, the reinforcing piece extends to the extreme edge of the insole at the inside shank portion of the unit. The shank stiffener 24, which is preferably made of tempered steel, is substantially narrower than the shank portion of the reinforcing piece 22 and is curved longitudinally to correspond to the longitudinal curvature of the bottom of a last. The illustrated shank stiffener 24 is provided at each end with attaching spurs or prongs 40, 40. The canvas reinforcing piece 26 is shaped to cover the insole forepart and part of the shank portion which lies inwardly of the sewing rib, and to overlie the inner side of the rib itself. As indicated at 56 in Fig. 3, however, the reinforcing canvas is cut away to expose an area 58 of substantial width along the inner lateral margin of the heel and shank reinforcing piece 22 to facilitate the securing of the overlasted margin of a shoe upper by fastenings such as staples to the inside shank portion of the insole unit. As clearly illustrated, the area 58 thus exposed extends from the inside edge of the heel and shank reinforcing piece 22 substantially half way to the opposite edge thereof. The omission of the sewing rib along the inside shank portion of the insole enables the shank stiffener to be located nearer the inner edge of the insole where it will function most effectively to support the inner longitudinal arch of the foot.

It is desirable to mold the shank and heel portions of the insole 20 and the reinforcing piece 22 to impart to each a longitudinal curvature which will adapt the unit to conform to the longitudinal curvature of the last bottom (and of the shank stiffener 24) and preferably also to curve the reinforcing piece and the heel and shank portion of the insole transversely to enable the insole unit to conform to the transverse curvature of the last bottom. To accomplish this result the insole 20 and the reinforcing piece 22, after having been assembled with the shank stiffener 24 interposed between them, may be subjected to molding pressure between cooperative molding members which may consist of a rigid molding member having a molding surface shaped to impart the desired curvature to the insole unit and a yielding molding member for cooperating with the rigid member. To insure that the contour imparted to the insole unit by the molding members shall be maintained with a minimum amount of distortion due to reaction of the molded parts upon relief of the molding pressure, adhesive may be utilized between the reinforcing piece 22 and the insole and molding pressure may be utilized to secure the parts together as well as to mold them, the pressure being maintained until the adhesive has set. It is preferable to employ for this purpose a cement such as rubber latex and to apply a coating of the cement to the lower or ribbed side of the insole and to the entire surface of the reinforcing piece at the side which is to face the insole. Advantageously, the parts are molded before the channel flaps 32 and 34 are raised and cemented together. In assembling the parts the reinforcing piece 22 is positioned with the edge of its heel portion registering with the corresponding edge of the heel portion of the insole and with the outer lateral edge of the shank portion of the reinforcing piece registering with the corresponding edge of the shank portion of the insole. The prongs 40 of the shank stiffener 24, which are herein shown as projecting from the side of the shank stiffener which is to engage the reinforcing piece 22, will be embedded within the latter as a result of the application of the molding pressure to the unit and will function, in addition to the cement, to hold the shank stiffener in place. The prongs on the shank stiffener may, however, be so formed as to project from the side which is to face the insole in which case they will be forced into the material of the insole by the molding pressure.

After the insole, the reinforcing piece and the shank stiffener have been assembled and secured together, and the insole and the reinforcing piece have been molded, the inner and outer channel flaps 32 and 34 are raised into upstanding positions and cemented together and the canvas reinforcing piece 26 is cemented in place so as to cover the forepart of the insole and to overlie the shank portion of the reinforcing piece 22 and marginal portions of the canvas reinforcing piece 26 are cemented to the inner side of the sewing rib. The canvas reinforcing piece 26 extends across the opening 28 in the skeleton insole and thus, in addition to reinforcing the sewing rib, it functions also to reinforce the forepart of the skeleton insole against various strains to which the insole may be subjected in the operation of lasting the shoe. Inasmuch as the reinforcing piece 26 remains in the finished shoe it serves also to reinforce the insole against various strains to which it is subjected in the wearing of the shoe.

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

1. A reinforced insole unit comprising an insole having a marginal sewing rib formed integrally therewith and extending around the forepart and along the outside shank portion only of the insole, a relatively stiff reinforcing piece secured to the heel and shank portions of the insole, the heel portion of said reinforcing piece being substantially coextensive with the heel portion of the insole and the shank portion of said reinforcing piece extending from the inner side of said sewing rib to the edge of the insole at the inside shank portion thereof and having a smooth unribbed outer surface, a shank stiffener located between said parts, and a piece of relatively flexible material secured to the forepart of the insole at the ribbed side thereof and to the outer side of the shank portion of said relatively stiff reinforcing piece and having a marginal portion reinforcing said rib throughout the length of the latter, said relatively flexible piece being cut away in the shank portion of the unit to expose the smooth outer surface of said relatively stiff reinforcing piece throughout an area extending from its edge at the inside shank portion of the unit substantially halfway to the opposite edge of said portion for the reception of the overlasted margin of a shoe upper.

2. A reinforced insole unit comprising an insole having a marginal sewing rib extending around the forepart and along the outside shank portion only of the insole, a relatively stiff reinforcing piece secured to and covering that portion only of the shank of the insole which extends from the inner side of said sewing rib to the inside edge of the insole, said reinforcing piece having a smooth unribbed outer surface, a shank stiffener located between said parts, and a fabric reinforcing piece secured to the forepart of the insole at the ribbed side thereof and to the outer side of said shank reinforcing piece and having a marginal portion reinforcing said rib throughout the length of the latter, and said fabric piece

being cut away in the shank portion of the unit to expose the smooth outer surface of said relatively stiff reinforcing piece throughout an area extending from its edge at the inside shank portion of the unit substantially halfway to the opposite edge of said portion for the reception of the overlasted margin of a shoe upper.

3. A reinforced insole unit comprising a skeleton insole having a central forepart opening and having a marginal sewing rib extending around the forepart and along the outside shank portion only of the insole, a relatively stiff reinforcing piece secured to and covering that portion only of the shank of the insole which extends from the inner side of said rib to the inside edge of the insole, said reinforcing piece having a smooth unribbed outer surface, a shank stiffener located between said parts, and a fabric reinforcing piece secured to the forepart of the insole at the ribbed side thereof and to the outer side of said shank reinforcing piece, said fabric piece covering said insole opening and having a marginal portion reinforcing said rib throughout the length of the latter, and said fabric piece being cut away in the shank portion of the unit to expose the smooth outer surface of said relatively stiff reinforcing piece throughout an area extending from its edge at the inside shank portion of the unit substantially halfway to the opposite edge of said portion for the reception of the overlasted margin of a shoe upper.

JOHN M. WHELTON.