Feb. 18, 1964 I. ROSENHAFT 3,121,431

INNERSOLE

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FIG. 1

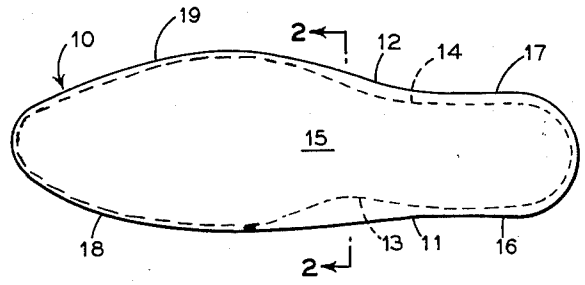


FIG. 5

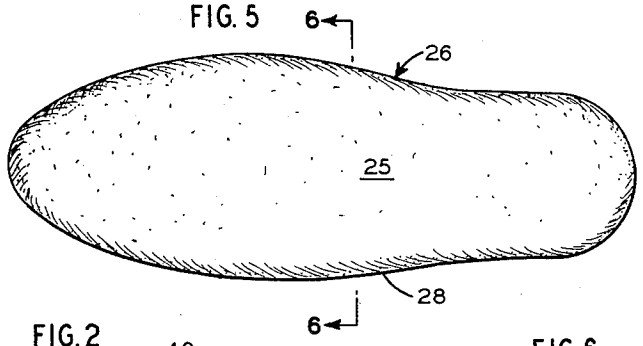


FIG. 2

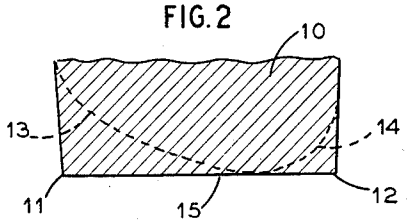


FIG. 3

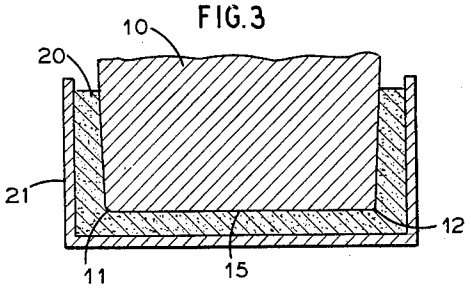


FIG. 4

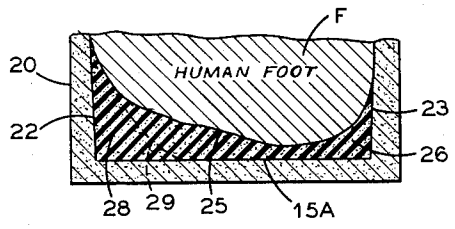
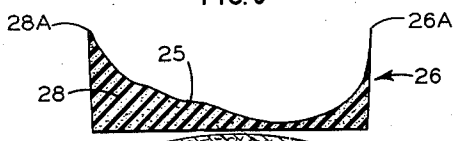


FIG. 6



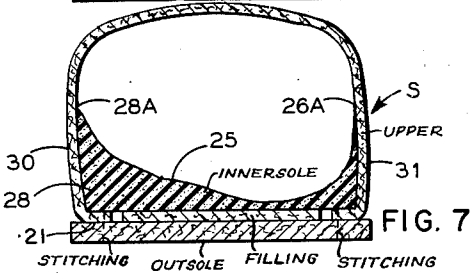


FIG. 7

INVENTOR.

Isaac Rosenhaft

BY Irving Seidman.

ATTORNEY

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FIG. 8

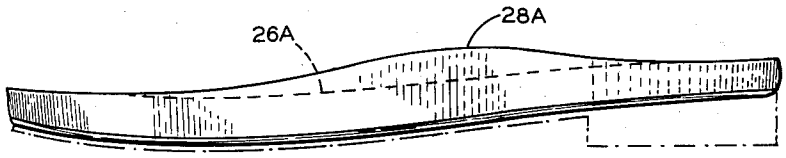


FIG. 9

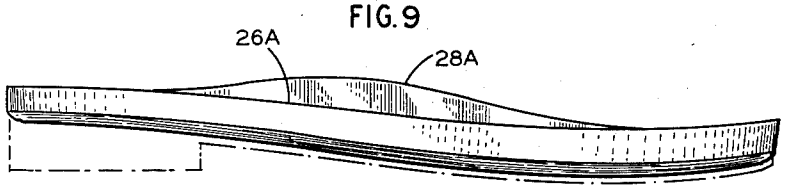
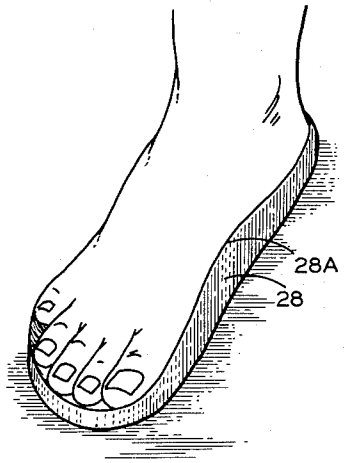


FIG. 10



INVENTOR.

Isaac Rosenhaft

BY Irving Reidman

ATTORNEY

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3,121,431

INNERSOLE

Isaac Rosenhaft, 182 Bennett Ave., New York N.Y.

Filed June 5, 1961, Ser. No. 114,931
2 Claims. (Cl. 128—595)

This invention relates to innersoles for footwear, and more particularly, concerns removable innersoles for association with shoes particularly adapted to receive the same.

Much effort has been expended in seeking to provide shoes which are particularly adapted for a specific wearer, in order to assure maximum comfort and proper support for the feet of such wearer. However, such efforts necessarily have involved custom fitting and manufacture, which makes the footwear almost prohibitive in cost for the average user.

Accordingly, an object of this invention is to provide an improved innersole element which is molded from deformable material, and which exhibits on its upper surface contours corresponding to those of the human foot, such element being removably insertable into a shoe to provide a maximum of comfort for the wearer.

Another object of this invention is to provide a molded innersole of the character described, which may be prepared in several variant forms to correspond to alternative foot contour patterns, whereby an individual may be fitted with the innersole best suited to his particular foot contours, the innersole being removably associated with a shoe to allow the wearer to make an appropriate selection of a preferred form of the innersole.

A further object of this invention is to provide an improved, molded innersole having extended transverse portions to insure maximum support for the arch of the wearer; together with a shoe particularly adapted to removably receive such molded innersole.

It has been suggested that foot support inserts be formed from molded deformable material with the configuration of the transverse sections of the insert being distorted in a manner to provide elevated portions at selected points to afford positive support for the so-called weak portions of the foot. However, such foot support inserts involve a buildup of material to effect an elevation of these foot portions, causing an abnormal displacement of such foot portions from their normal disposition. This in turn may give rise to further foot discomfort and damage.

Accordingly, it is a further object of this invention to provide an improved molded innersole which cradles the foot in its normal, undistorted position, yet provides adequate support and assures maximum comfort for the wearer.

Still another object of this invention is to provide an improved molded innersole prepared from one or more master molds which represent a series of composite or standardized simulations of the contours of the average human foot for a given size; thereby affording maximum comfort for the average wearer without the need for custom fitting, thereby minimizing shoe costs.

Other objects of this invention will in part be obvious and in part hereinafter pointed out.

In the drawing, FIG. 1 is a bottom plan view of a last used in forming the innersole embodying the invention;

FIG. 2 is a partial transverse section taken on the line 2—2 of FIG. 1;

FIG. 3 is a transverse sectional view showing the use of said last to form a mold;

FIG. 4 is a transverse sectional view showing the formation of said innersole in said mold.

FIG. 5 is a top plan view of the innersole embodying the invention;

FIG. 6 is a transverse sectional view taken on the line 6—6 of FIG. 5;

FIG. 7 is a transverse sectional view showing said innersole incorporated in a shoe;

FIG. 8 is a side elevational view of the innersole showing the inner edge thereof;

FIG. 9 is a view similar to that of FIG. 8, showing the outer edge of the innersole;

FIG. 10 is a perspective view of the innersole.

In accordance with the instant invention, a unitary innersole embodying the invention is formed by a molding operation, from moldable, deformable material, such as latex impregnated fiber, paper, cork, or the like; or alternatively from foamed elastomeric materials such as polyurethane or the like.

To produce such an innersole, a modified last is used to form a mold. To this end, the last of conventional contours, is built up along the inner and outer longitudinal edges thereof to provide essentially rectilinear transverse surface portions at all points between the heel and toe portions. This in turn results in removal of the conventional transverse curvatures at the inner and outer edges thereof and provides sharp substantially right angle edges in lieu thereof.

Such a last is used to form a mold of gypsum or the like, which is disposed in a suitable container while in a plastic state; the last being inserted into the gypsum and retained therein until the gypsum sets to form the mold.

The resultant mold will have the normal longitudinal contour of the last, but will have straight linear transverse surface portions at various points between the heel and toe. A latex-fiber composition is then poured into the gypsum mold and partially set. While still in a plastic stage, a human foot is used to mold the normal contours thereof, as the inner surface of latex composition held in said mold. Alternatively, a selected last may be used to mold the inner surface of the latex structure.

It is understood that such mold will be formed in a series corresponding to the various foot sizes. This permits innersoles of the instant invention to be formed from such molds.

Thus, as shown in FIG. 1, **10** designates a last to be used in making the innersole of the invention. Last **10** has its inner and outer bottom edges **11, 12** respectively built up to provide sharp substantially right angle edge portions; the normal transverse curved edges being indicated by the dotted lines **13, 14.** This in turn provides a rectilinear element **15** extending transversely between edges **11, 12.** Similarly, edge portions **16, 17** at the heel and edge portions **18, 19** at the toe are also built up, to provide rectilinear transverse portions in these areas. It is understood that the normal longitudinal contours of the last along the medial portion thereof are maintained.

The modified last **10** is then used to form a mold of gypsum or the like, indicated at **20,** in FIG. 3, wherein a container **21** holds gypsum and last **10** inserted therein while the gypsum is still in a plastic state. On setting, mold **20** will have the bottom and side surface contours of last **10** reproduced, as at **22, 23** and **15A.**

A quantity of latex fiber composition, suitably compounded to vulcanize or set at room temperature, is placed in mold **20,** as shown in FIG. 4. In a custom fitted operation, the individual who is to use the particular innersole, will place his foot, indicated at F, in mold **20,** to form the inner surface **25** in the moldable material forming innersole **26.** On setting, innersole **26,** as shown in FIG. 6, will also have rectilinear transverse bottom surface portions as at **27.** Also, innersole **26** will include integral material as at **28** along the inner longitudinal edge thereof and having a feather edge **28A,** where the dotted line **29** indicates the normal transverse contour of a con-

ventional innersole. The outer edge of innersole **26** has a feather edge as at **26A**.

Innersole **26** is adapted to be used with a specially lasted shoe S, as shown in FIG. 7, wherein the shoe has an outersole extended transversely at the arch to accommodate innersole portion **28**. Also, shoe S is lasted to provide an increaed depth of upper portions **30**, **31** to accommodate the inserted, removable innersole **26**.

The innersole **26** may also be formed by the use of selected lasts in lieu of the human foot F; such lasts representing a composite of average foot contours. Also, the innersoles may be made from a selected group of lasts, to provide some latitude in fitting.

The latex fiber composition used in forming the innersole **26** may include aerating or foaming agents, to impart greater resiliency to the final product.

As various changes might be made in the embodiments of the invention herein described without departing from the spirit thereof, it is understood that all matter herein shown or described is illustrative and not by way of limitation except as set forth in the appended claims.

What is claimed is:

1. A molded deformable removable innersole, said innersole being adapted to extend from toe to heel of a shoe and having a bottom surface that is rectilinear from side to side throughout the length of the innersole, said innersole having peripheral side walls formed at substantially a right angle with said bottom surface, said innersole having an upper surface molded to conform to a human foot, said innersole also comprising an integral arch supporting portion on its upper surface, said portion extending along the middle edge of the innersole.

2. The combination of claim 1 with a shoe having a surface on which the innersole rests, said surface and the bottom surface of the innersole being configurated to conform with each other.

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