United States Patent

Silverman

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[54] PROTECTIVE SHOE INSERT

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[52] **U.S. Cl.** **36/44**
[51] **Int. Cl.** **A43b 13/38**
[58] **Field of Search** 36/44, 43, 58.5

[56] **References Cited**

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[57] **ABSTRACT**

A protective insert for a shoe, the insert being contoured to conform to the insole of the shoe and having a sculptured heel portion to cup the heel of the wearer in the space between the counter of the shoe and the insole. The insert is formed by an underlayer of foamed, closed-cell, flexible plastic material of high density, laminated to a face layer of a fabric which is longitudinally stretchable to facilitate sliding of the foot within the shoe.

3 Claims, 4 Drawing Figures

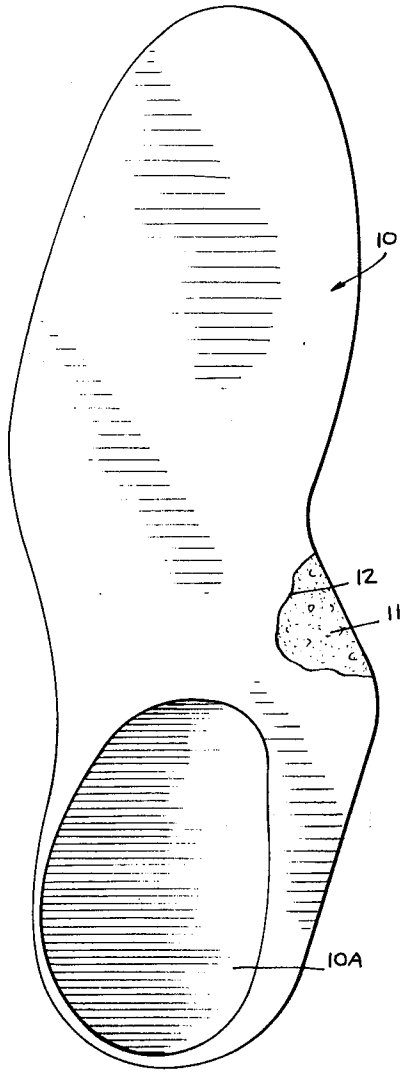
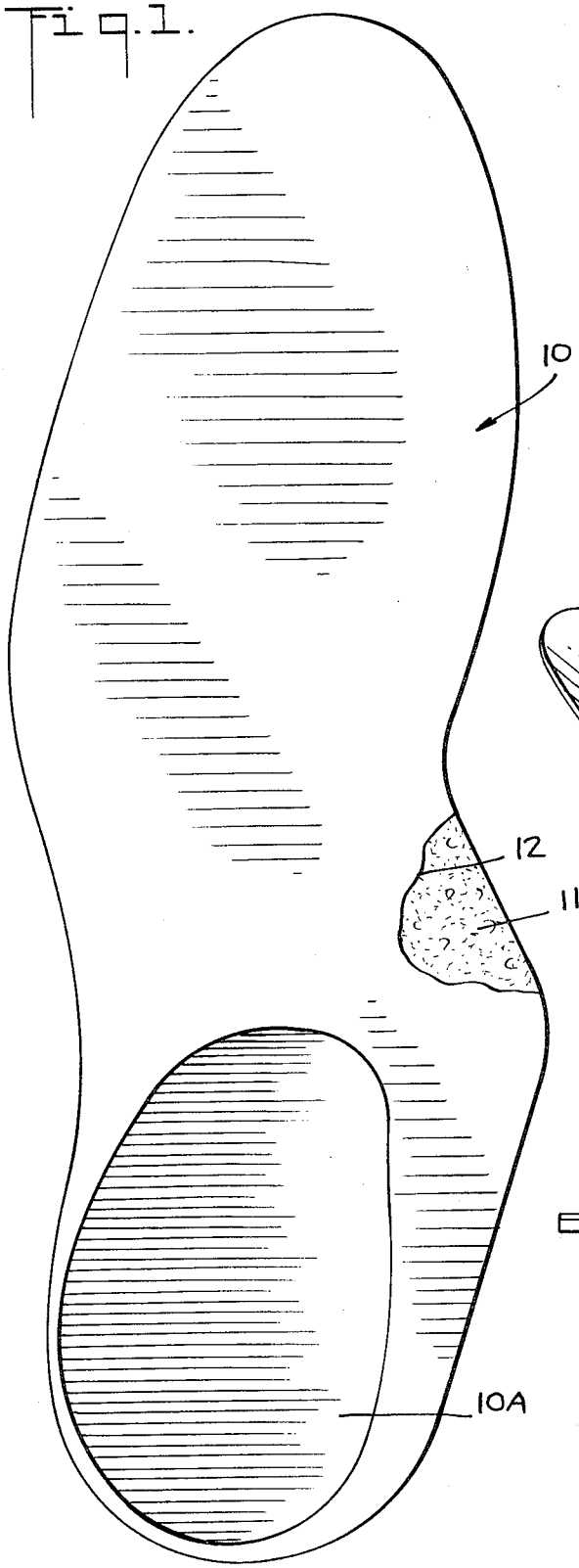


Fig. 1.



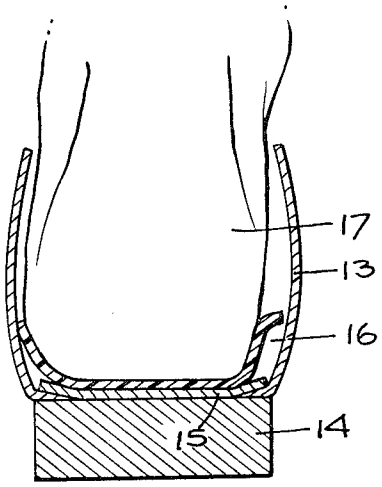


Fig. 4.

Fig. 2.

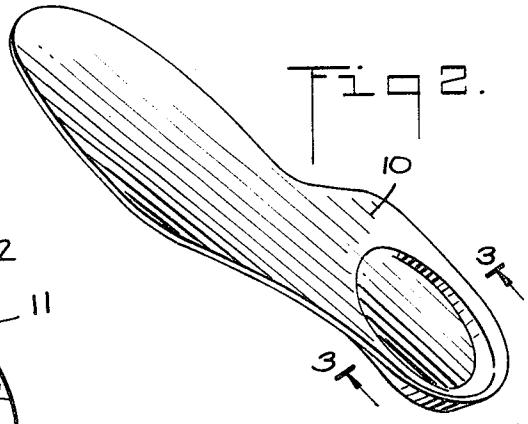
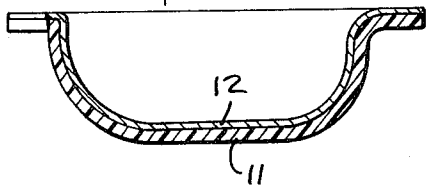


Fig. 3.



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PROTECTIVE SHOE INSERT

BACKGROUND OF THE INVENTION

This invention relates generally to shoe inserts, and more particularly to an insert having a sculptured heel portion.

The anatomical structure of the human foot is in the form of a tripod, the weight of the body being normally borne upon the heel and the heads of the first and fifth metatarsals. In the act of walking, the body weight is first imposed on the heel, and should one be walking on pavement or any hard, unyielding surface, a shock will be transmitted to the heel bone or oscalsis unless some form of shock absorber or cushioning is interposed between the surface and foot heel. This shock induces early fatigue in walking and may in time lead to foot difficulties, particularly in overweight persons.

In a conventional shoe, some degree of cushioning is afforded by a rubber heel or a heel constituted by other types of resilient material. However, this form of protection is generally inadequate so that it may be necessary to make use of a shoe insert fabricated of cushioning material. Conventional shoe inserts are made in flat form and are profiled to more to less conform to the insole of a shoe. While such inserts somewhat protect the foot against shock effects, they are deficient in other important respects.

In a mass-produced shoe of standard construction, the interior contours do not conform to the shape of the foot, but only roughly approximate this shape. In a manufactured shoe, the counter surrounds a flat insole, a marginal space existing at the interface therebetween. The human foot, on the other hand, has lateral borders at the heel which are curved so that the flat of the heel merges into the sides thereof. As a consequence, the human foot is not snugly engaged and does not conform to the insole and counter section of a typical mass-produced shoe. In the course of walking, the heel of the foot, which is somewhat loosely received within the shoe, rubs against the walls thereof and is irritated thereby. This drawback is not overcome by cushioning inserts of the type heretofore known.

Another problem encountered in shoes is heat buildup resulting from sliding friction. In the course of walking, the foot tends to slide somewhat within the shoe. This action is unavoidable, for the dynamics of foot motion are such as to make some degree of slide movement necessary as the body weight is brought down on the forefoot. If the shoe dimensions are restricted to prevent such sliding, the shoe would be intolerably tight. But with a standard shoe insert, as the forefoot slides against the surface of the insert, the resultant friction generates heat which leads to discomfort.

SUMMARY OF INVENTION

In view of the foregoing, it is the main object of this invention to provide a shoe insert which not only improves the cushioning qualities of the shoe but also enhances the comfort of the wearer in other significant respects.

More particularly it is an object of the invention to provide a shoe insert having a sculptured heel portion to cup the heel of the wearer in the space between the counter of the shoe and the insole, thereby stabilizing the heel without hindering the normal functioning of the arch and forefoot.

Also an object of the invention is to provide an insert of the above type which accommodates rather than resists the sliding motion of the foot within the shoe, to minimize the buildup of heat.

Still another object of the invention is to provide an improved shoe insert which may be manufactured and sold at low cost.

Briefly stated, there objects are attained by a shoe insert formed of an underlayer of foamed, closed-cell plastic material of high density which is laminated to a face layer of material which is longitudinally stretchable, the insert being profiled to conform to the insole of a shoe and having a sculptured heel portion which is contoured to cup the heel of the foot within the shoe.

OUTLINE OF DRAWING

For a better understanding of the invention as well as other objects and further features thereof, reference is made to the following detailed description to be read in conjunction with the accompanying drawing, wherein:

FIG. 1 is a plan view of a shoe insert in accordance with the invention;

FIG. 2 is a perspective view of the insert;

FIG. 3 is a transverse section taken along the plane indicated by line 3—3 in FIG. 2; and

FIG. 4 is a transverse section taken in a shoe having the insert placed therein.

DESCRIPTION OF INVENTION

Referring now to the drawing, there is shown a shoe insert in accordance with the invention, generally designated by numeral **10**, which is designed to be placed within a conventional shoe. Insert **10** is formed by an underlayer **11** of closed-cell, high-density resilient plastic material, preferably or polyethylene or polyurethane, which is laminated to a face layer **12** of woven or knitted stretchable fabric material, such as nylon.

The profile of the insert is such as to generally conform the insert to the insole of a standard shoe. This form is not critical and one may make inserts in four sizes: small, medium, large and extra-large; suitable for the full range of standard shoe sizes. Alternatively, a single large-size insert may be trimmed to conform to a particular shoe.

The problem with shoes is illustrated in FIG. 4, wherein it will be seen that the counter **13** of a shoe is joined to the heel **14** thereof, while above the heel is the insole **15**. Because the counter bulges away from the heel, a marginal space **16** exists at the interface thereof. On the other hand, the heel **17** of a human foot does not have a form which is consonant with that of the counter and heel section of a shoe, for the lateral border of the heel has a natural curvature which creates a free space between this border and the shoe.

Thus the heel of the foot is not snugly received in the typical shoe and is not held stably therein. However, with the present invention, the heel portion **10A** of the insert is sculptured to conform to that of the human heel, and when the insert is placed in the shoe, it serves to cup the human heel and to occupy the otherwise free space between the human heel and the shoe. In this way the heel is snugly held in the shoe, and the insert serves not only to cushion the heel and to minimize shock effect, but also to stabilize the heel and thereby improve the walking qualities of the shoe.

The formation of the sculptured heel portion may be effected by vacuum-molding the insert, the thermoplastic underlayer conforming to the shape of the mold. Because the face layer is stretchable, it will shape itself to the contours of the underlayer. The stretchability of the face layer has another important function, for when the foot slides within the shoe against the face layer, this layer does not resist sliding motion but yields thereto, thus avoiding friction and heat buildup. To further enhance the slidability of the insert, the face layer may be coated with a suitable silicone compound to reduce surface friction effects.

While there has been shown a preferred embodiment of the protective shoe insert of the present invention, it will be appreciated that many changes and modifications can be made therein without departing from the essential spirit of the invention.

I claim:

1. A removable shoe insert for a shoe having an insole joined to a heel and a counter which bulges away from the heel to create a marginal space therebetween, said insert comprising an underlayer of closed-cell resilient foam material to impart cushioning properties to the insert, and a face layer laminated thereto to engage the plantar area of the foot, the profile of the insert generally conforming to the insole of the shoe, the heel portion of the insert having a sculptured well formed therein to conform to the shape of a human heel,

thereby to cup the heel, said heel portion of the insert having a marginal flange receivable within said marginal space of the shoe, said layer being longitudinally stretchable to yield to the sliding motion of the foot within the shoe.

2. A shoe insert as set forth in claim 1, wherein said underlayer is formed of closed-cell, high-density polyethylene.

3. A shoe insert as set forth in claim 1, wherein said face layer is of stretchable nylon fabric material.

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