

United States Patent

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[54] **FOOT CUSHIONING SUPPORT MEMBER**
5 Claims, 4 Drawing Figs.

[52] U.S. Cl..... 36/44

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[50] Field of Search..... 36/44, 29

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ABSTRACT: A foot supporting and cushioning member for footwear in the nature of a removable, preferably disposable, liner constructed from a pair of laminated gas impervious sheets of thin, lightweight, elastic material, and having a multiplicity of separate gas filled pockets distributed over the support surface of the member.

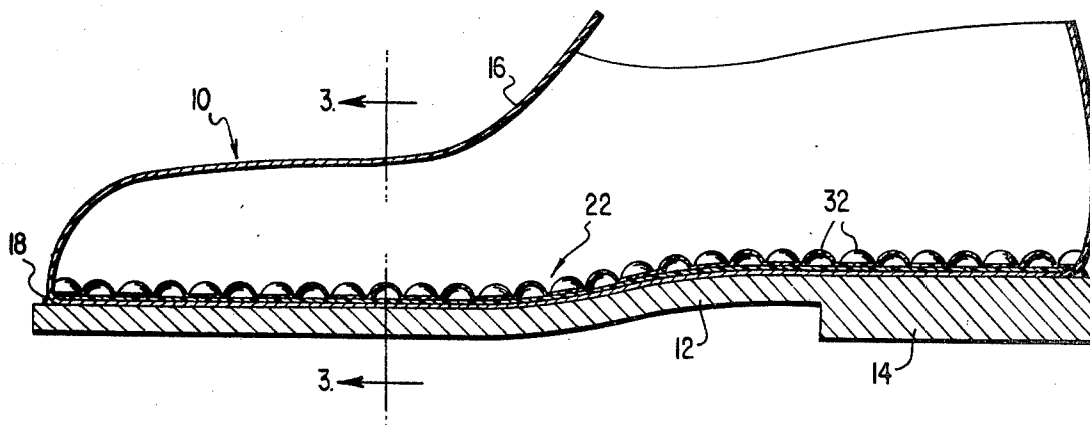


FIG. 1

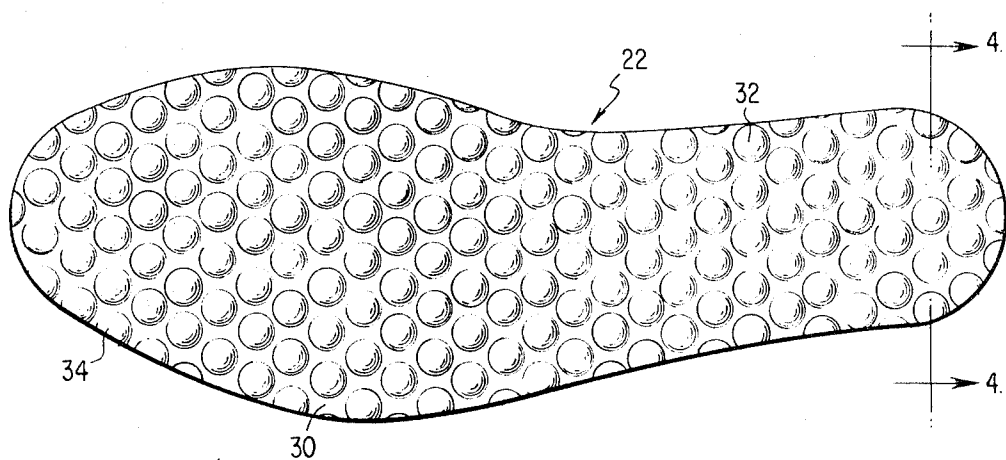


FIG. 2

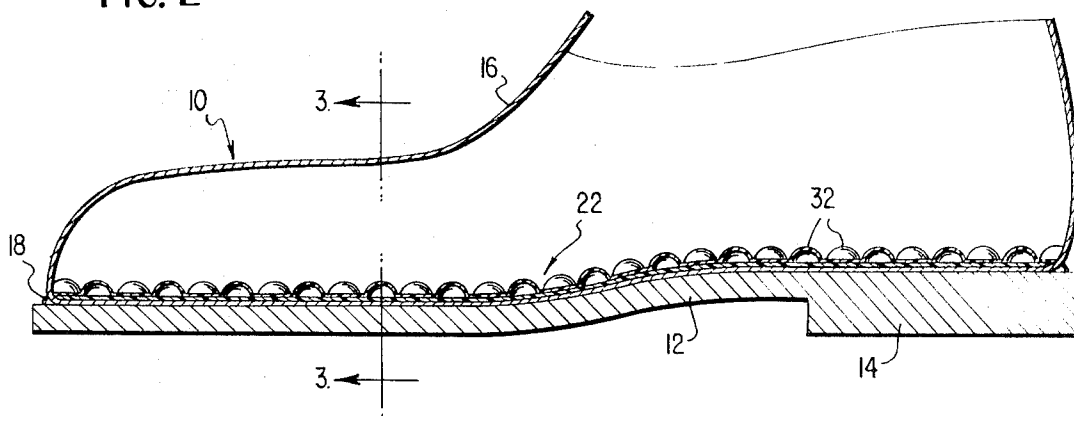


FIG. 3

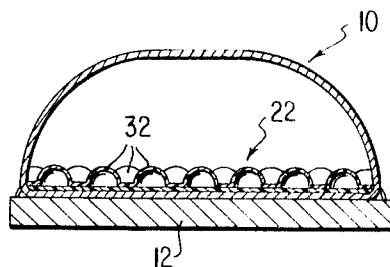
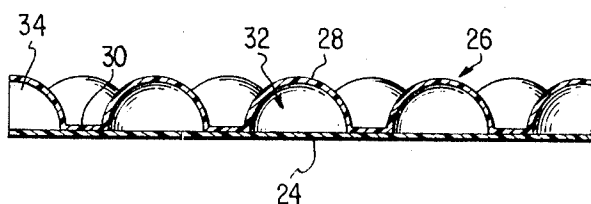


FIG. 4



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FOOT CUSHIONING SUPPORT MEMBER

BACKGROUND OF THE INVENTION

Foot supporting and cushioning members such as shoe liners are well known and widely used. Various materials have been incorporated and different constructions utilized. Heretofore, however, many such members have consisted of relatively thick materials fabricated into expensive and bulky units and which were not satisfactorily susceptible of adaptation to use in a reasonable range of sizes. These previous devices being significantly expensive, tended to result in use over protracted periods of time, with possible decrease in desirable sanitary conditions. Many of the known types additionally did not provide the possibility of varying amounts of support for different foot surface areas.

SUMMARY OF THE INVENTION

It is accordingly one object of the present invention to provide foot supporting and cushioning members, such as shoe liners and the like, which obviates drawbacks in previous types. The present invention provides a foot supporting and cushioning member which is sanitary, lightweight and inexpensive, can be easily mass produced, and which is susceptible of convenient removable insertion in footwear, and because of its low cost is feasibly disposable after a short time of use. The liner in use gives a comforting and cool support to a user's foot, and can be so designed as to desirably vary and distribute a user's weight over predetermined zones of the foot. Another object is to provide such a support member in which air is readily circulated about the plural support elements and the foot of the user.

Other and additional objects and advantages of the invention will be more readily understood from the following detailed description of an embodiment thereof when taken together with the accompanying drawing, in which:

FIG. 1 is a top plan view of a foot cushioning support according to the invention;

FIG. 2 is a vertical sectional view through a shoe having a support of the invention inserted therein;

FIG. 3 is a sectional view taken on line 3-3 of FIG. 2; and

FIG. 4 is a sectional view taken on line 4-4 of FIG. 1.

Referring now in detail to the drawings, a shoe or other article of footwear 10 is shown in FIG. 2 in section, and provides a setting for the invention. The shoe consists of the usual sole 12, heel 14 and upper 16. The upper is secured to the sole in any usual manner such as by stitching, broadly indicated at 18. An innersole 20 can be superposed on the upper surface of the sole. The foregoing is all standard known practice and does not constitute a part of the present invention. It is to be understood that the invention is usable with any type of footwear.

The foot cushioning support member of the invention, broadly designated 22, has a general shape and size adapted to fit in footwear of a user. Different sizes and shapes can of course be provided, although the material and construction of the member are such that slight variations in footwear can be readily accommodated. Member 22 is fabricated from a pair of plastic sheets 24 and 26 which are superposed and laminated by heat sealing or the like. The sheets consist of an inexpensive heat sealable plastic material which is lightweight, thin, elastic and gas impervious. One material which is satisfactory for the purpose is polyethylene, although any other suitable material known in the art, and having the requisite properties, can be used.

In one method of forming the members, sheets of the plastic, preferably in continuous form, can be passed through a system of heated, forming molding and sealing rolls. One of the rolls can be a female mold having spaced semispherical shaped molding cavities in the surface thereof, or a male mold having semispherical molding protuberances thereon, to form in one sheet 26 a plurality of spaced individual semispherical pockets 28 interconnected by planar sheet segments 30 of the sheet or web. The pockets 28, in the embodiment shown in the drawings are formed in staggered longitudinal and lateral rows

to provide greater surface coverage. Sheet 24 is not embossed in the shown embodiment. The two sheets with air therebetween, are heat sealed together around the peripheries of the pockets to complete a composite sheet with the plurality of air-filled semispherical pockets therein. Other methods well known in the art can be used, such not forming a part of this invention.

The configuration of the pockets can be varied as desired but it has been found that the semispherical shape provides advantages, one of which is that they can be compressed with a lighter force than those having sharp angularly disposed edges, and still retain the same overall support strength.

The elastic or resilient material permits easy distortion and distension of the pockets when force is applied to the member by a user's foot. The plurality of spaced pockets which can be varied, insures overall cushioned foot support, and the individuality of the pockets is well suited to a foot contour and force or load distribution.

If desired the pockets can be of different sizes and proportions in different areas of the member, and/or the air pressure within the pockets can be varied in different areas or regions for greater foot and force conformity. Methods for accomplishing the foregoing are known in the art.

The sheet as formed can be cut into desired shapes and sizes as required for use, and members can be easily stamped out of preformed sheets of a composite laminated structure. Various of the pockets along the peripheral edge of a finished member may be cut or severed, such as at 34, but this does not detract from overall results since main foot pressure or a user's weight is not normally applied in such areas, and in use permits easier conformity of a member to the footwear.

The resultant article is cool and comfortable in use and being inexpensive can be disposed of after relatively short periods of use. Sanitary conditions are thus enhanced. Breakage of a few of the air pockets does not seriously detract from continued use enjoyment because of the substantial number of the individual pockets in conjunction with the closeness of the provided pocket array.

It will be appreciated that one of the particular advantages of the support member is that air may readily circulate between the pockets thereby materially reducing the heat previously trapped and confined in shoes. It will also be appreciated that air circulation about the novel cushion is enhanced when the foot is moved within the shoe as a result of normal walking or running.

Manifestly minor changes and modifications can be effected in the invention without departing from the spirit and scope thereof, as defined in and limited solely by the appended claims.

I claim:

1. In a shoe, a foot supporting and cushioning footwear liner comprising a composite laminated pair of gas impervious sheets of thin, lightweight elastic material, including a base sheet and an upper sheet, said upper sheet constituting a foot support surface, the composite laminated sheets incorporating a multiplicity of upwardly protruding exposed gas filled pockets defined in the upper foot support sheet in spaced distribution thereover and providing a plurality of separate foot support elements permitting air circulation thereabout and about the foot of a user.

2. In a shoe, a foot supporting and cushioning member as claimed in claim 1, said base sheet being planar and said upper sheet having partial pockets defined therein such that as laminated, closed gas filled pockets are formed between the sheets and extending upwardly from said upper sheet.

3. In a shoe, a foot supporting and cushioning member as claimed in claim 2, said pockets being hemispherical with flat bases provided by said planar sheet and said pockets extending upwardly from said flat bases for foot user contact.

4. In a shoe, a foot supporting and cushioning member as claimed in claim 3, said sheets being joined in planar areas surrounding and intermediate said pockets.

5. In a shoe, a foot supporting and cushioning member as claimed in claim 4, said sheet material consisting of a heat sealable plastic and said sheets being laminated by heat sealing.