United States Patent [19]

Murawski

[11] **3,822,490**

[45] **July 9, 1974**

[54] **HOLLOW MEMBER FOR SHOES**

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[21] Appl. No.: **356,333**

[52] **U.S. Cl.** ..... **36/2.5 R,** 36/35 R

[51] **Int. Cl.** **A43b 21/26**

[58] **Field of Search** ..... 36/35 R, 35 A, 34 R, 28, 36/2.5 R

[56] **References Cited**

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[57] **ABSTRACT**

A hollow member for a shoe which includes a recessed construction so that as the user walks a cushioned effect is provided.

4 Claims, 9 Drawing Figures

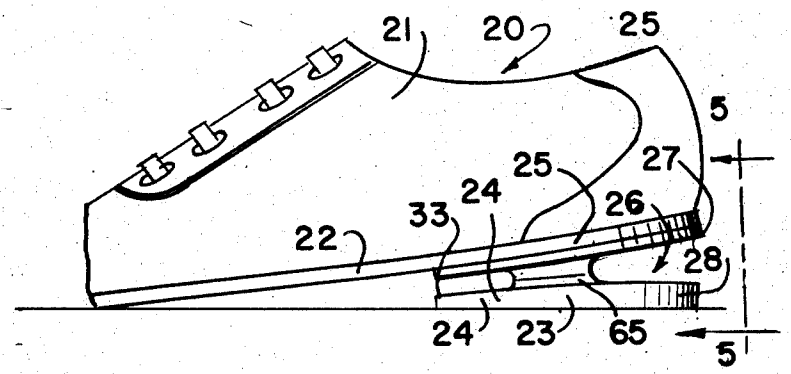
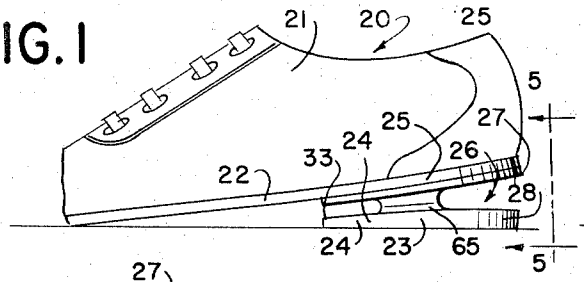


FIG. 1



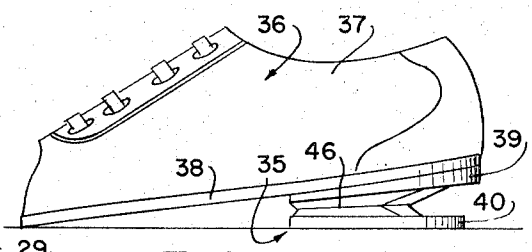


FIG. 2

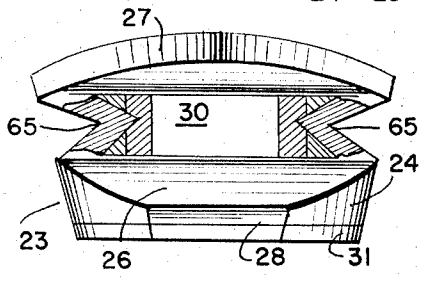


FIG. 5

FIG. 3

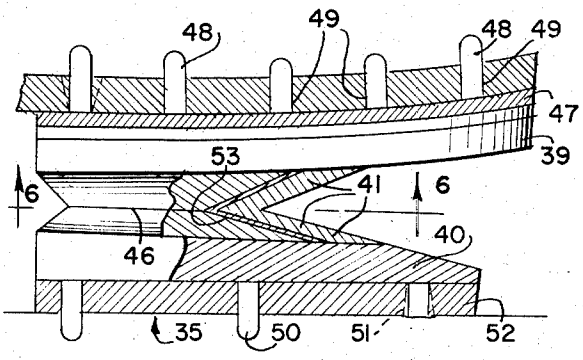


FIG. 4

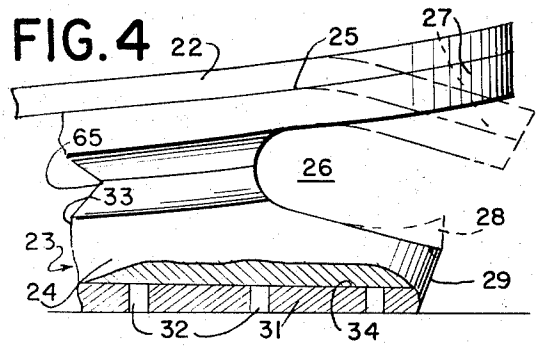


FIG. 7

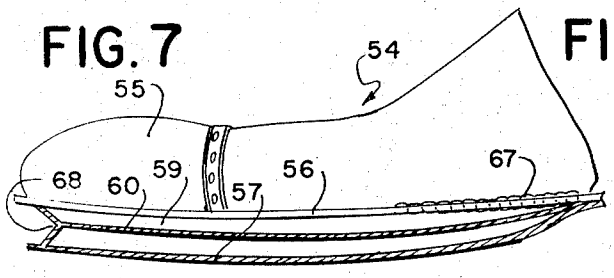
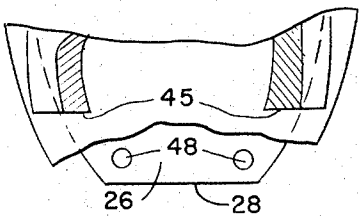


FIG. 9



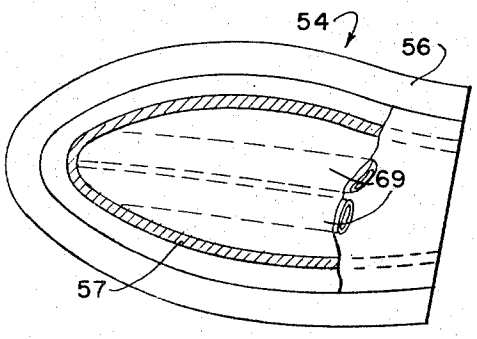


FIG. 8

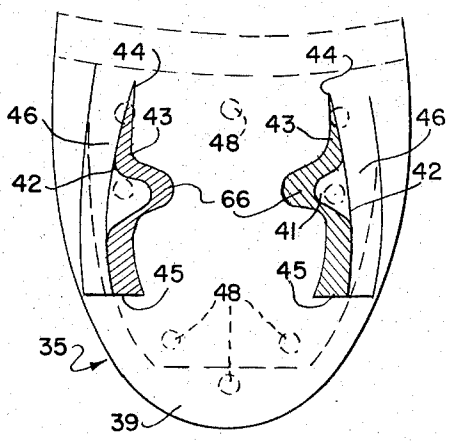


FIG. 6

HOLLOW MEMBER FOR SHOES

The present invention relates to footwear for shoes, and more particularly to a hollow heel and hollow sole for such a shoe.

One of the objects of the present invention is to provide a hollow heel for a shoe that will flex as the user walks so that the user can wear the shoe with increased comfort or flexibility.

Another object of the invention is to provide a shoe that includes a hollow heel and hollow sole, so that there is provided an air space within the heel or shoe that permits a flexing action to take place during use of the shoe.

Yet another object is provision of a hollow heel or sole that is economical to manufacture and efficient in operation and which is rugged in structure.

Other objects and advantages of the present invention will become apparent as the following description proceeds.

To the accomplishment of the foregoing and related ends, the invention, then, comprises the features hereinafter fully described and particularly pointed out in the claims, the following description and the annexed drawings setting forth in detail certain illustrative embodiments of the invention, these being indicative, however, of but a few of the various ways in which the principles of the invention may be employed.

In the drawings:

FIG. 1 is a side elevational view of one form of a hollow heel constructed according to the present invention.

FIG. 2 is a fragmentary side elevational view of a modified or alternative form of the hollow shoe heel.

FIG. 3 is an enlarged partial sectional view of the heel of FIG. 2 and with parts broken away and in section.

FIG. 4 is an enlarged elevational view of the heel of FIG. 1, with parts broken away and in section for clarity of illustration.

FIG. 5 is an end elevational view of the heel of FIG. 1 and taken on the line 5—5 of FIG. 1.

FIG. 6 is a sectional view taken on the line 6—6 of FIG. 3.

FIG. 7 is a side elevational view, with parts broken away and in section, showing a sole construction that is hollow.

FIG. 8 is a plan view of the sole of FIG. 7, with parts broken away and in section.

FIG. 9 is a fragmentary sectional view illustrating certain constructional details of the heel and showing the bottom layer squared off end of the heel.

Referring in detail to the drawings, and more particularly to FIGS. 1, 4 and 5 of the drawings, the numeral 20 indicates a portion of a shoe that includes the usual upper 21 and sole 22, and the numeral 23 indicates the hollow heel of the present invention. As shown in the drawings, the heel 23 includes a body member 24 that is made of a suitable material, such as rubber or plastic and has a certain amount of resiliency therein. The top surface of the body member 24 may be inclined as at 25. The numeral 26 indicates a recess that is formed or arranged in the rear portion of the heel whereby there is defined in the heel at the rear thereof upper and lower portions or flaps 27 and 28. The rear end of the lower section 28 may be squared off as indicated by the numeral 29, FIG. 4. As shown in FIG. 5, there is provided in the body member 24, an opening 30 which establishes communication between the recess 26 and the front edge 33 of the heel 23. The numeral 31 indicates a base piece or bottom piece, and the base piece 31 may be suitably secured to the flat lower surface 34 of the heel 23 by means of securing elements such as tacks 32.

Attention is directed to FIGS. 2, 3 and 6 of the drawings, wherein there is illustrated a modified or alternative shoe heel, as is indicated by the numeral 35, and the hollow shoe heel 35 is adapted to be used with a conventional shoe 36 that includes the usual upper 37 and sole 38.

As shown in FIGS. 2, 3 and 6, the hollow shoe heel 35 includes a top piece 39 and a bottom piece or section 40, and interposed or positioned between the top and bottom pieces 39 and 40 is a pair of spaced apart, curved side members or side pieces 41. Each of the side pieces 41 has the same construction and each has outer and inner curved surfaces 42 and 43. The side pieces 41 have a tapered formation so that the front edge tapers to a point 44, while the rear edge is wider or thicker, as indicated by the numeral 45. The numeral 46 indicates a V-shaped groove or recess that is provided in the flexible side pieces 41 so that a cushioned effect is provided for the heel as the user wears the same.

As shown in FIG. 3, there is provided adjacent the top of the shoe heel 35, layers of material 47 which may have projections or nipples 48 extending therefrom, and the nipples 48 are snugly received in openings 49 in the sole 38. Nipples or projections 50 depend from the bottom of the heel 35, and a base piece 52 has openings 51 that receive the nipples 50, and this provision of the coating nipples and openings provides a means for attaching the shoe heel to the shoe as well as providing a means for affixing the base piece to the bottom of the heel. The side pieces 41 may be encased or enclosed in reinforcing material 53, as shown in FIG. 3, whereby the flexible plastic or rubber will be maintained in its proper position.

Referring now to FIGS. 7 and 8 of the drawings, there is illustrated a further modification wherein there is shown a flexible sole for a shoe 54 that has an upper 55 as well as a bottom portion 56. The numeral 57 indicates the flexible sole that is adapted to be secured at its outer periphery 58 to the member 56. The sole 57 has a hollow interior whereby there is provided an inner air space, and the side wall portion 59 of the sole has a V-shaped groove or indentation 60, which assures that the proper flexing action will take place as the user wears the shoe.

From the foregoing, it will be seen that there has been provided a hollow member for a shoe and in use with the parts arranged as shown in FIGS. 1, 4 and 5, for example, it will be seen that with the heel 23 suitably affixed to the shoe 20, as the user walks, the heel can flex due to the provision of the recess 26 and opening 30 which in effect provides a hollow heel construction. The top and bottom portions or flaps can flex from the solid line position shown in FIG. 4 to the broken line position shown in FIG. 4 so that a cushioned effect will be provided as the user walks. The body portion 24 is adapted to be made of a suitable yieldable material, such as plastic or rubber.

Similarly, when using the heel 35, shown in FIG. 2, 3 and 6, the interior of the heel is substantially hollow, due to the provision of the bottom pieces 39 and 40,

and this hollow heel construction will thus permit the heel to flex to assure maximum comfort to the user. The heel **35** may be connected to the sole **38** by means of nipples or projections **48** that are snugly rereceived in openings **49** in the sole **38.** Similarly, nipples **50** on the lower end of the heel are adapted to engage corresponding openings **51** in the base piece **52** whereby there is provided a means for attaching the base piece to the lower surface of the heel.

The same cushioned effect can be provided for the sole of the shoe as illustrated in FIGS. **7** and **8,** wherein the sidewall **59** has a V-shaped groove or recess **60** therein so that the bottom portion or sole portion **57** can flex whereby the sole of the shoe will also give as the shoe is worn.

It is to be understood that the parts can be made of any suitable material and in different shapes and sizes as desired or required.

It will be seen that the heel of the present invention is hollow and includes an opened end, hinged construction. As shown in FIG. **3,** instead of using nails, which scratch floors and the like, protruding nipples **48** and **50** can be used and these can be pressed into the bottom wearing layer **52** of the heel, and the pointed protruding ends of the nipples can be cut off or melted into cone shaped bottom hole openings for faster production. For placing on the bottom wearing layer of the heel, this feature also allows the cavity or opening to be formed inside the heel so that less plastic is used.

The heel has improved flexing action with the open end construction and the heel is a see-through construction and allows for less wear and tear on the bottom end of the heel, due to the flexing action on both ends of the heel. Also, the heel is easier to walk on and will take the pounding out of walking and the like. Thus, the heel has a spring flexing action and both ends can flex. The top of the heel may be nailed to a shoe. The side walls may have an increased thickness construction. Hot, molded plastic may be forced through cone-shaped holes to hold the bottom layer of the heel, which is made of nylon or the like. The bottom can also be nailed to the heel if desired. However, the nipple snap-on construction is preferred. The heel may be made of a suitable material, such as a suitable polyethylene plastic with a nylon bottom.

The heel **35,** shown in FIG. **3,** has two-way flexing action and the flexing action side walls **41** may be thicker and higher or lower for heavier people or the like. Also, the heel can be made in different sizes and shapes with thicker or thinner sidewalls and larger or smaller openings in the open end of the heel.

The heel has shock absorbing actions. The heel is simple to make and has the two flexing features.

Thus, the present invention includes two separate shock absorbing features in a see-through style with a simplified heel construction that is practical. The present invention is an improvement over prior devices such as those shown in prior U.S. Pat. Nos. 3,114,981, 2,985,971 and 2,983,056.

The heel shown in FIG. **6** has a hollow interior with both ends open, and there is provided a V-shaped groove **46** on the sides, and the heel of FIGS. **2, 3** and **6** has flexing action. Plastic nipples can be cut off if desired, or nails can be used, and the heels can be attached to the shoe by these nipples, which can be melted down into cone-shaped holes that are punched in the shoe. The bottom layer of material, such as the layer **52,** may be made of poly-urethane plastic. The end of the heel may be squared off so as to prevent turning or twisting of the heel during walking and this will also provide better foot balance. As shown in FIG. **3,** the nipples may be melted down into the bottom waring layer **52.**

In the sole construction of FIGS. **7** and **8,** the top of the sole base is slightly longer than the member **57** and the flexing sole can be sewed on or glued on or heat-sealed on the shoe. By heat-sealing the ends of the sole in place, water seepage and the like will be prevented. The V-shaped groove **60** gives the flexing action. A thin wearing surface can be applied by the same method. FIG. **8** illustrates a plan view of the flexing sole with the V-shaped groove.

As shown in the drawings, including FIGS. **1** and **4,** a V-shaped groove **65** is arranged in the sides of the heel.

The present invention includes protruding stubs or nipples in one form thereof as indicated by the numerals **48** and **50** in FIG. **3.** There is also provided the hinge flexing action or pivot action, and in FIG. **6** the numeral **66** indicates the pivot points so that a rocking flexing motion for the heel is provided.

With further reference to the see-through hollow heel construction, when the heel is attached to the shoe, the bottom lip or layer **28** shown in FIG. **4,** will flex or move and then the top layer **27** will flex due to the rigid shoe construction whereby the parts can move from a solid line position of FIG. **4** to the broken line position of FIG **4.**

In FIG. **1** there is illustrated the V-shaped groove **65** in the sides of the heel. FIG. **2** illustrates how the tip end of the heel is slightly inward. In FIG. **3** there is illustrated cone-shaped holes or openings. As shown in FIG. **4,** both the bottom and top layer can flex. FIG. **5** also shows the V groove **65** in the sides of the heel. FIG. **6** illustrates the pivot points indicated by the numeral **66** which serve as hinge balancing zones or points for both ends of the flexing heel.

In FIG. **7** the numeral **67** indicates the point where the device is sewn by means of thread to the shoe portion of the sole, and FIG. **7** also illustrated the V-shaped groove **60** in the front of the shoe.

There is also provided a V-shaped groove **68** in the front of the shoe sole. FIG. **8** illustrates the inside of the sole with tubes **69** that are hollow and serve as supporting members. The sole ends can either be heat sealed or glued to the shoe.

The heel is adapted to have sufficient length to provide the desired arch support. The end of the heel bottom layer is adapted to be squared off. The sole with the hollow inner tubes **69** provides a flexing action.

As shown in FIG. **1,** the stub of the pivot joint hinge is relatively short so that there will be a rocking chair motion in the heel during walking.

In FIG. **6,** the balance pivot joints are adapted to be arranged approximately in the center of the heel or slightly forward thereof.

Modifications may be made in the device as disclosed without departing from the spirit of the invention as defined in the appended claims.

I claim:

1. In a hollow heel for a shoe that includes an upper and a sole, said heel comprising an inclined top surface, a bottom piece, said heel including a body portion having a recess in the rear thereof that defines upper and

lower portions that can flex towards and away from each other, said heel having an opening therein that communicates with said recess.

2. The structure as defined in claim **1** wherein the lower rear portion of the heel is squared off.

3. In a hollow heel for a shoe including a sole, and an upper, said heel including top and bottom pieces, said sole having openings therein, nipples projecting from the top and bottom of the heel, the top nipples received in the openings in the sole, a base piece having openings for receiving the lower nipples, a pair of spaced apart side pieces interposed between said top and bottom pieces, said side pieces having V-shaped grooves in the outer surfaces thereof, each of said side pieces having a tapered formation and wherein the front of side pieces tapers to a point and the rear thereof is of wider construction, reinforcing material surrounding said side pieces for retaining the side pieces in place, the front and rear ends of the heel being open, said heel being made of flexible plastic-like material.

4. In a shoe, an upper and a sole, a hollow base affixed to said sole at its outer periphery, and said base including a side member having V-shaped grooves therein to permit flexing action, and hollow tubes arranged in the sole providing supporting members.

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