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# (54) Exercising shoe sole

Übungsschuh-Sohle

Semelle de chaussure d'entraînement

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## Description

The present invention relates generally to shoe soles, and more particularly to a shoe sole structure for effecting an increased exercise to the wearer of a shoe with the shoe sole according to the preamble of claim 1.

**[0001]** An athletic shoe of the kind referred to above is known from from US-A-4 040 192.

**[0002]** However, such sole lacks a means for resisting the decrease of the shock-absorbency in the walking activities and the drooping of the recessed heel area down to the ground after longtime use of the sole.

**[0003]** It is known from US-A- 4 372 059 that the shoes have been provided with such a construction that they protect the foot of the wearers in their walking activities while serving as a means for absorbing the grounding shocks of the foot. Conventional shoes generally have flat soles with or without the heels protruding from the backward area of the soles. The walker with such shoes will make the steps on the ground initially with the sole of the forward shoe at its rear area which delivers the full shocks from the ground to the walker's foot without any cushioning effect of the front foot region and thus the positive effect of exercising the walker which is disadvantageous

**[0004]** In DE-A-34 15 705 there are disclosed shoes having an elastic substructure comprising a forward sole section extending from the toe to the region of ball and a short rear sole section, both of which are interconnected by a rigid but elastic bridge section. An elastic element is fixed to the underside of the bridge section.

**[0005]** The primary object of the present invention is to provide an improved sole structure for being used with the, does to enhance the amount of the exercise and thus the health of the wearer of the shoes.

**[0006]** Another object of the present invention is to improve the shock-absorbency of the shoe sole while giving the better feelings of wearing the shoes by providing a shoe sole having a means for stimulating certain areas of the wearer's soles, the stimulating means also absorbing shocks from the walks.

**[0007]** Yet another object of the present invention is to provide a means for resisting the droops of the recessed heel of the shoe sole even after a longtime use of the shoe sole.

**[0008]** The foregoing objects in mind in accordance with the present invention there is provided a shoe sole as set out in claim 1.

**[0009]** According to a preferred embodiment of the present invention, the forward sole section has at its rear side a plurality of grip means to tighten the cushioning means in the shoe sole and to prevent the slippage of the shoes in the walking activity; and the cushioning means includes a space formed therein; and the return panel support comprises a panel stepped in conformity to the stepped bottom of the shoe sole, the panel including a plurality of contoured protrusions and openings to have an enforcement and a flexibility.

## BRIEF DESCRIPTION OF THE DRAWINGS

**[0010]** The above and other objects, features and other abvantages of the present invention will be more clearly understood from the following detailed description taken in conjunction with the accompanying drawings, in which:

FIG. 1 is a perspective view showing a shoe sole according to an embodiment of the present invention in its disassembled state;
FIG. 2 is a partially cutaway perspective view of the shoe sole shown in FIG. 1 which is assembled depicting a return panel support; and
FIG. 3 is a sectional view of the shoe sole, taken along the line II - II of FIG. 2.

**[0011]** Referring now to FIG. 1 showing a preferred embodiment of the present invention, the shoe sole 1 is shown with its bottom up to illustrate the general shape wherein the area corresponding to the heel is removed or recessed to enhance the amount of the exercise and the health of the wearer of the shoes (not shown) with the shoe soles 1 even with short distance of walking by having the weight of the wearer in walking fall on the forward soles of the wearer's foot.

**[0012]** The shoe sole 1 generally comprises a rear sole section 2 coextending with the recessed heel area or recess heel, which is known; a forward sole section 3 forming the grounding bottom of the shoe sole 1; and an intermediate sole section 4 between the forward and rear sole sections 3 and 2. The intermediate sole sections 4 may have a slit transversing the width of the shoe sole 1 and extending to a part of the forward sole section 3. In the slit a wedge-shaped cushion member 5 is inserted, as shown in FIG. 2. A return panel support 6 is buried in the rear sole section 2 to strengthen the returning power of the recess heel against the tendency of its depression by the user, as shown partially in FIG. 2 and sectionally in FIG. 3.

**[0013]** In addition, the forward sole section 3 has at its rear side two or more grip members 9 to prevent the possible slippages of the shoes in the walking activity and also to tighten the cushion member in the shoe sole 1.

**[0014]** Here, the cushion member 5 may be made of a synthetic resin or natural rubber which will absorb the grounding shocks during walking or it may be made of other shock-absorbing material. Also, the cushion member 5 includes a space 10 to increase the cushioning effect. The space 10 may be closed or opened at one side of the cushion member 5.

**[0015]** The return panel support 6 in the rear sole section 2 is preferably conformed to the bottom of the shoe sole which is best shown in FIG. 3 as bends of the intermediate sole section 4 between the forward and rear

sole sections. Further, the return panel support 6 may be provided by a stepped panel which has a variety of contoured protrusions 7 to enforce the support 6 and a plurality of openings 8 in various diameters to give a flexibilty according to the needs of the individual designs of the shoes.

**[0016]** In operation of the above construction of the shoe sole of the present invention, the shoe soles 1 are first attached to the shoes such as sports shoes to be worn by a wearer who will then moves with only the forward sole section 3 of the shoe sole 1 grounded at each step maintaining the rear sole section 2 at a height from the ground, thereby having the weight of the wearer fall on the forward sole of the wearer. Walking in this state gives the wearer the equal effect of climbing a slope in the order of 15° or stairs. For instance, five minutes of use of such shoe sole correspond to about fifty minutes of walking with common flat soled shoes which helps to enhance the wearer's health with the continued exercising within short time.

**[0017]** Meanwhile, in addition to the general shock-absorbing action of the soft material of the shoe sole 1, the unique cushion member 5 between the forward and rear sole sections 3 and 2 will further absorb the residual shocks from the ground before their transmission to the foot of the wearer's body in order to protect it while stimulating the arches of the wearer's foot. Such stimulation virtually becomes a series of acupuncturing pressures on the specific region of the human foot sole which strengthen the associated Five Vital Organs of lung, heart, spleen, kidney and liver.

**[0018]** Additionally, the return panel support 6 buried in the rear shoe sole 2 prevents the drooping of the recess heal formed in the region of the rear shoe sole 2 assuring the constant coziness of wearing the associated shoes.

**[0019]** As is described above, the exercising shoe sole according to the present invention functions to actively exercise its wearers in walking to enhance their health, increases the shock-absorbency improving the coziness of wearing the associated shoes, and prolongs the life of the shoe sole in its original shape.

## Claims

1. A shoe sole with a recess heel for being used with the shoes to enhance the amount of the exercise and the health of the wearer of the shoes with relatively short distance of walking, said shoe sole (1) comprising a rear sole section (2) generally coextending with the area of said recess heel, a forward sole section (3), an intermediate sole section (4) disposed between said forward and rear sole sections and protruded giving a stepped bottom to the shoe sole, **characterized in that** a wedge-shaped cushioning means (5) is inserted and held in said intermediate sole section (4), and a return panel support (6) is built in at least said rear sole section (2) to give a force of restitution to the shoe sole (1) at the area covering said rear and intermediate sole sections (2, 4).

2. A shoe sole according to claim 1, wherein said forward sole section (3) has at its rear side a pluralitly of grip means (9) to tighten said cushioning means (5) in said sole and to prevent the slippage of said shoes in the walking activity.

3. A shoe sole according to claim 1 or 2, wherein said cushioning means (5) includes a space (10) formed therein.

4. A shoe sole according to any preceding claim, wherein said return panel support (6) comprises a panel stepped in conformity to said stepped bottom of said shoe sole, said panel including a plurality of contoured protrusions (7) and openings (8) to have an enforcement and a flexibility.

## Patentansprüche

1. Schuhsohle mit einem ausgenommenen Fersenteil zum Einsatz bei Schuhen zur Verstärkung der Übungsanstrengungen und zur Verbesserung der Gesundheit eines Trägers der Schuhe bei relativ kurzen Bewegungswegen, wobei die Schuhsohle (1) ein hinteres Sohlenteil (2), welches sich im allgemeinen wie der Bereich des ausgenommenen Fersenteils erstreckt, ein vorderes Sohlenteil (3) und ein Zwischensohlenteil (4) aufweist, welches zwischen dem vorderen und hinteren Sohlenteil angeordnet ist und derart vorsteht, daß sich eine stufenförmig abgesetzte Unterseite der Schuhsohle ergibt, **dadurch gekennzeichnet**, daß eine keilförmige Dämpfungseinrichtung (5) in dem Zwischensohlenteil (4) eingesetzt und dort gehalten ist, und daß eine Rückstellplattenabstützung (6) wenigstens in dem hinteren Sohlenteil (2) eingebaut ist, um der Schuhsohle (1) in dem Bereich, welcher den hinteren Sohlenteil (2) und den Zwischensohlenteil (4) überdeckt, eine Rückstellkraft zu verleihen.

2. Schuhsohle nach Anspruch 1, bei der das vordere Sohlenteil (3) an seiner hinteren Seite eine Mehrzahl von Widerhalteeinrichtungen (9) hat, um die Dämpfungseinrichtung (5) in der Sohle straffer zu machen und um ein Rutschen der Schuhe bei den Gehbewegungen zu verhindern.

3. Schuhsohle nach Anspruch 1 oder 2, bei der die Dämpfungseinrichtung (5) einen darin ausgebildeten Hohlraum (10) umfaßt.

4. Schuhsohle nach einem der vorangehenden Ansprüche, bei der die Rückstellplattenabstützung

(6) eine Platte aufweist, welche in Übereinstimmung mit dem stufenförmig abgesetzten Bodenteil der Schuhsohle stufenförmig abgesetzt ausgebildet ist, und bei der die Platte eine Mehrzahl von konturierten Vorsprüngen (7) und Öffnungen (8) umfaßt, um eine Verstärkung und Flexibilität bereitzustellen.

**Revendications**

1. Semelle de chaussure à talon évidé destinée à être utilisée avec les chaussures pour améliorer la quantité d'exercice et la santé de celui qui porte les chaussures, sur une distance de marche relativement faible, ladite semelle (1) comprenant une partie arrière (2) dans le prolongement général de la surface dudit talon évidé, une partie avant (3), une partie intermédiaire (4) entre lesdites parties arrière et avant, et en saillie, ce qui donne un fond en paliers à la semelle, caractérisée en ce qu'est inséré un élément amortisseur (5) en forme de cale qui est tenu dans ladite partie intermédiaire (4), et un support de panneau de retour (6) est encastré au moins dans ladite partie arrière (2) pour donner une force de restitution à la semelle de chaussure (1) dans la zone couvrant lesdites parties arrière et intermédiaire (2, 4).

2. Semelle de chaussure suivant la revendication 1, dans laquelle ladite partie avant (3) comporte, sur son côté arrière, une pluralité d'éléments de serrage (9) destinés à serrer ledit élément amortisseur (5) dans ladite semelle et d'empêcher le glissement desdites semelles pendant la marche.

3. Semelle de chaussure suivant la revendication 1 ou 2, dans laquelle ledit élément amortisseur (5) comporte un espace (10) qui y est inclus.

4. Semelle de chaussure suivant l'une des revendications précédentes, dans laquelle ledit support de panneau de retour (6) comprend un panneau en paliers en conformité avec ledit fond en paliers de ladite semelle de chaussure, ledit panneau comportant une pluralité de saillies (7) et d'ouvertures (8) qui sont modelées pour donner renforcement et souplesse.

FIG 1

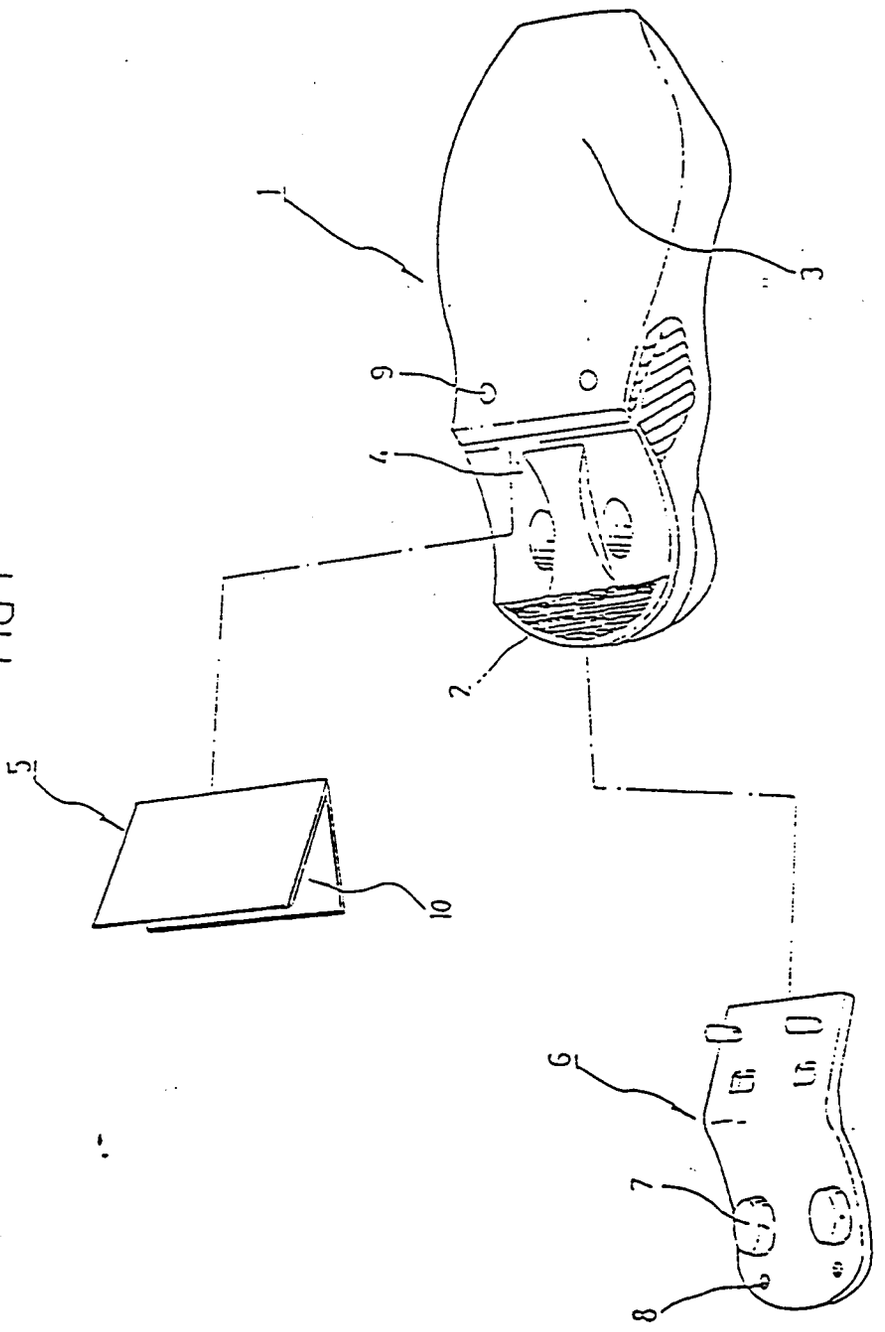

FIG 2

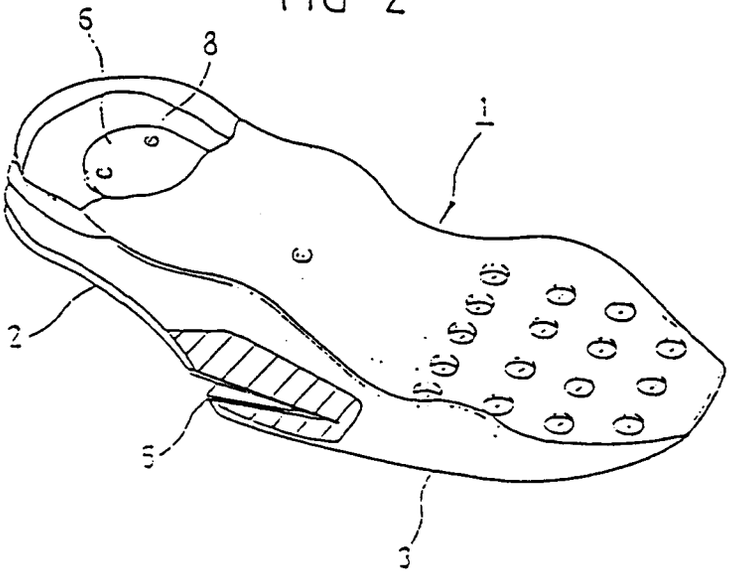


FIG 3