

INSOLE AND SHOE COMPRISING SAID INSOLE**DESCRIPTION**

The present invention refers, in general, to an insole and to a shoe comprising said insole. More particularly, the present invention refers to an insole suitable for make the foot lean more comfortable, and to a shoe comprising said insole, so that it is made more comfortable and performing.

As is known, in the shoe industry the trend to make more comfortable and, in the same time, more performing is strong. Obviously this need must consider the intensive use of the same pair of shoes often carried out by the user, the request of providing a cheap article and the possible presence of ailments of the foot, such as, for example, the metatarsalgia, the plantar fasciitis, and others.

In fact, performing shoes have been introduced in the market, even for the relief of possible ailments of the foot; but these shoes have high costs.

Besides, known shoes, if used continuously and persistently, can easily lose their properties related to comfort and effectiveness, so that a new pair of shoes is needed.

In addition, the footwear on the market have limited effectiveness because some types of shoes tend to favor the suspension at the expense of foot support or vice versa, without, inter alia, operating with an active action on foot.

The aim of the invention is to overcome the problems mentioned above and others, by providing an insole, and consequently a shoe comprising said insole, that act on the foot with an action of both cushioning and support.

Another aim of the invention is to provide an insole and a shoe that act also actively on the foot, preventing any ailment.

A further aim of the invention is to provide an insole and a shoe that have

lower costs, while ensuring comfort and high performance.

These aims and benefits are all met, according to the invention, by an insole for footwear comprising a top layer wherein at least a supporting area of the foot, at least a dampening area of the foot and at least a stimulating area of the foot are defined.

Thanks to the presence of different areas and with different technical characteristics, the insole can act on the foot simultaneously with different modes of action, so that not only the walking is more comfortable and stable, but also the foot is stimulated and relaxed.

In addition, the insole includes, below the top layer, at least one of the following layers, possibly arranged one above the other:

- a first layer made of a mixture of cork and rubber;
- a second layer made of foam with memory effect;
- a third layer made of high density foam.

In particular, at least a portion of at least one of these layers pass through the top layer and any upper layers to it, so that this portion, by protruding from the upper layer, creates one or more supporting areas of the foot and/or one or more dampening areas of the foot and/or one or more stimulating area of the foot.

Advantageously, the supporting area may comprise one or more of the following areas:

- a first supporting area in correspondence of the region of the backfoot, having the function of giving stability and balance to the foot in the entry stage of the step;
- a second supporting area in correspondence of the region of the lateral vault of the foot, having the function of supporting the foot in order to

reduce the possible supination of the foot;

- a third supporting area in correspondence of the region of the longitudinal arch of the foot, having the function of supporting the medial vault of the foot ;
- a fourth supporting area in correspondence of the diaphyseal regions of the metatarsals, having the function of accompanying the foot in the boost phase so as to lighten the load on the metatarsal heads.

In addition, the insole according to the invention may provide that the dampening area may comprise at least one of the following:

- a first dampening area in correspondence of the metatarsal region of the foot;
- a second dampening area in correspondence of the longitudinal vault of the foot;
- a third dampening area in correspondence of the calcaneal region of the foot.

Thanks to the presence of one or more dampening areas, you reduce the load impact due to the body weight in plantar support, so that the compression made on the heel is cushioned and the stress on metatarsals when they are being thrust in and out points is reduced.

Advantageously, the insole can provide that the stimulating area can be placed in correspondence of the midtarsal region of the foot, so that the body stability is helped thanks to the impulses given by the stimulated areas on every step.

The insole can comprises, as previously defined, at least one of the following layers:

- a first layer made of a mixture of cork and rubber;
- a second layer made of foam with memory effect;

- a third layer made of high density foam;
- a fourth layer, or top layer, made of suede.

In this way, each layer has a particular function on the foot and in correspondence of the various areas of contact with the foot.

The aim and benefits are achieved, according to the invention, even from a shoe comprising an insole as previously defined.

Further features and details of the invention will be better understood from the following specification, which is provided by way of a non-limiting example, as well as from the annexed drawings, wherein:

figure 1 is a synthetic top view of an insole, according to the invention;

figure 2 is the exploded synthetic side axonometric view of the insole of figure 1.

With reference to the figures attached, an insole is pointed with the reference number 10 suitable for being placed in a shoe to give comfort and high performance.

The insole 10 is made of four different layers. Below a first layer 32 is arranged made with a mixture of cork and rubber. Below the first layer, a second layer 34, made of foam with memory effect, known in the trade as "memory foam", is placed, and above this a third layer 36 is placed, obtained with high density foam. Finally, the fourth layer 20, placed on the third layer 36 and above all three layers described earlier, is made of suede.

On the fourth layer 20 or top layer, as shown in Figure 1, there are many areas, each one with particular characteristics of shape and softness.

In particular, the insole 10 comprises different areas including material which is different in density. In the insole 10 different areas are noticeable, areas with different behaviors on the portion of the foot which is supported. Areas of

support, cushioning areas, or areas of stimulation of the foot are so obtained.

The insole 10 comprises four areas of plantar support.

A first supporting area 12 corresponds with the region of the backfoot and it has the function of giving stability and balance to the foot in the entry stage of the step.

A second supporting area 14 corresponds with the region of the lateral vault of the foot, and it helps to support the foot in order to reduce the possible supination of the foot.

A third supporting area 16 corresponds with the region of the longitudinal arch of the foot, and it supports the medial vault of the foot, without stiffening it, permitting a rolling phase, defined by technical terms more natural and physiological "midstance".

A fourth supporting area 18 corresponds with the diaphyseal regions of the metatarsals and it accompanies the foot in the boost phase so as to lighten the load on the metatarsal heads.

The insole 10 also comprises three plantar damping areas, namely a first dampening area 22 corresponding with the metatarsal region of the foot, a second dampening area 24 corresponding with the longitudinal vault of the foot and a third dampening area 26 corresponding with all the calcaneal region of the foot.

These three damping areas 22, 24, 26 permit to reduce the load impact of body weight in plantar support. In fact, the heel is subjected to strong compressive stress during the first phase of the step, and therefore, thanks to the damping areas 22, 24, 26, the longitudinal vault is not supported in a too rigid way.

The difference in density between the various damping areas 22, 24, 26 and the supporting areas 12, 14, 16, 18 allows the foot to perform its physiological

pronation in that area and the metatarsals are depreciated in the areas of increased stress during the pushing and takeoff phase.

The insole 10 also comprises a first stimulating area 28 and a second stimulating area 30 which are placed in midtarsal region of the foot and they hark
5 back to the technique of plantar reflexology.

Reflexology stimulation given by the two areas of stimulation 28, 30 do not represent a real massage, but, at every step, help the stability of the pelvis through impulses that relax the stimulated area.

The 10 foot according to the invention may give the foot a well-being, a
1) feeling of full support, it helps stability in static and dynamic phases so that a greater adaptability is permitted and therefore it improves posture.

The utilized materials and the placed supports also ensure improved circulatory standpoint and thus they help to give a wearying effect to foot and leg.

The insole according to the invention may be extractable, that is it can
5 conform as an insole to position within existing footwear and be replaced or removed.

At the same time, the insole according to the invention may be included in a shoe, and then it can conform as a fixed orthotic.

The procedure for making the insole provides for an initial phase wherein
1) the second layer 34, the third layer 36 and the fourth layer 20 are pressed in a special mold that produces on said fourth layer some embossed areas corresponding to the supporting areas, to the damping areas and the stimulating areas of the foot.

Later the procedure provides for the molding of the first layer 32 which is
5 simultaneously fixed to the other three layers 20, 34, 36.

According to a variant of the invention, an insole for footwear may include a top layer 20 which at least one supporting area 12, 14, 16, 18 of the foot, at least a damping area 22, 24, 26 of the foot and at least a stimulating area 28, 30 of the foot are defined in.

The insoles also includes the following layers:

- a first layer 32 made of a mixture of cork and rubber;
- a second layer 34 made of foam with memory effect; and
- a third layer 36 made of high density foam.

These layers are arranged one above the other and below the top layer 20.

In particular, the layers listed above pass through the potential layers placed above and the top layer 20 in specific portions of the insole.

The portion of each layer of the lower layers which protrudes from the upper layer 20 on the upper part, so creates one or more supporting areas 12, 14, 16, 18 of the foot, or one or more damping areas 22 24 26 of the foot, or one or more stimulating areas 28, 30.

The layers described above may also be present in smaller numbers.

Further variants are possible to be considered within the scope of protection; for example, the damping areas, the supporting areas and the stimulating areas can be defined in different number and location.

CLAIMS

1) Insole (10) for shoes comprising a top layer (20) wherein at least a supporting area (12, 14, 16, 18) of the foot, at least a dampening area (22, 24, 26) of the foot and at least a stimulating area (28, 30) are comprised, **characterized by the fact**
5 **of comprising, below the top layer (20), at least one of the following layers:**

- a first layer (32) made of a mixture of cork and rubber;
- a second layer (34) made of foam with memory effect;
- a third layer (36) made of high density foam;

and by the fact that at least a section of at least one of said layers pass through
0 the top layer (20) and the potential layers placed above said at least one of said layers, so that said at least a section, by protruding from the top layer (20), creates the at least a supporting area (12, 14, 16, 18) of the foot and/or the at least a dampening area (22, 24, 26) of the foot and/or the at least a stimulating area (28, 30).

5 2) Insole (10) according to the preceding claim, wherein the at least one supporting area comprises at least one of the following:

- a first supporting area (12) in correspondence of the region of the backfoot, having the function of giving stability and balance to the foot in the entry stage of the step;
- 0 - a second supporting area (14) in correspondence of the region of the lateral vault of the foot, having the function of supporting the foot in order to reduce the possible supination of the foot;
- a third supporting area (16) in correspondence of the region of the longitudinal arch of the foot, having the function of supporting the medial vault of the foot ;
- 5 - a fourth supporting area (18) in correspondence of the diaphyseal regions of the

metatarsals, having the function of accompanying the foot in the boost phase so as to lighten the load on the metatarsal heads.

3) Insole (10) according to one of the preceding claims, wherein the at least one dampening area comprises at least one of the following:

- a first dampening area (22) in correspondence of the metatarsal region of the foot;
- a second dampening area (24) in correspondence of the longitudinal vault of the foot;
- a third dampening area (26) in correspondence of the calcaneal region of the foot.

4) Insole (10) according to one of the preceding claims, wherein the at least one stimulating area (28, 30) is placed in correspondence of the midtarsal region of the foot.

5) Insole (10) according to one of the preceding claims, wherein the top layer (20) is made of suede leather.

6) Shoe comprising an insole (10) according to one of the preceding claims.

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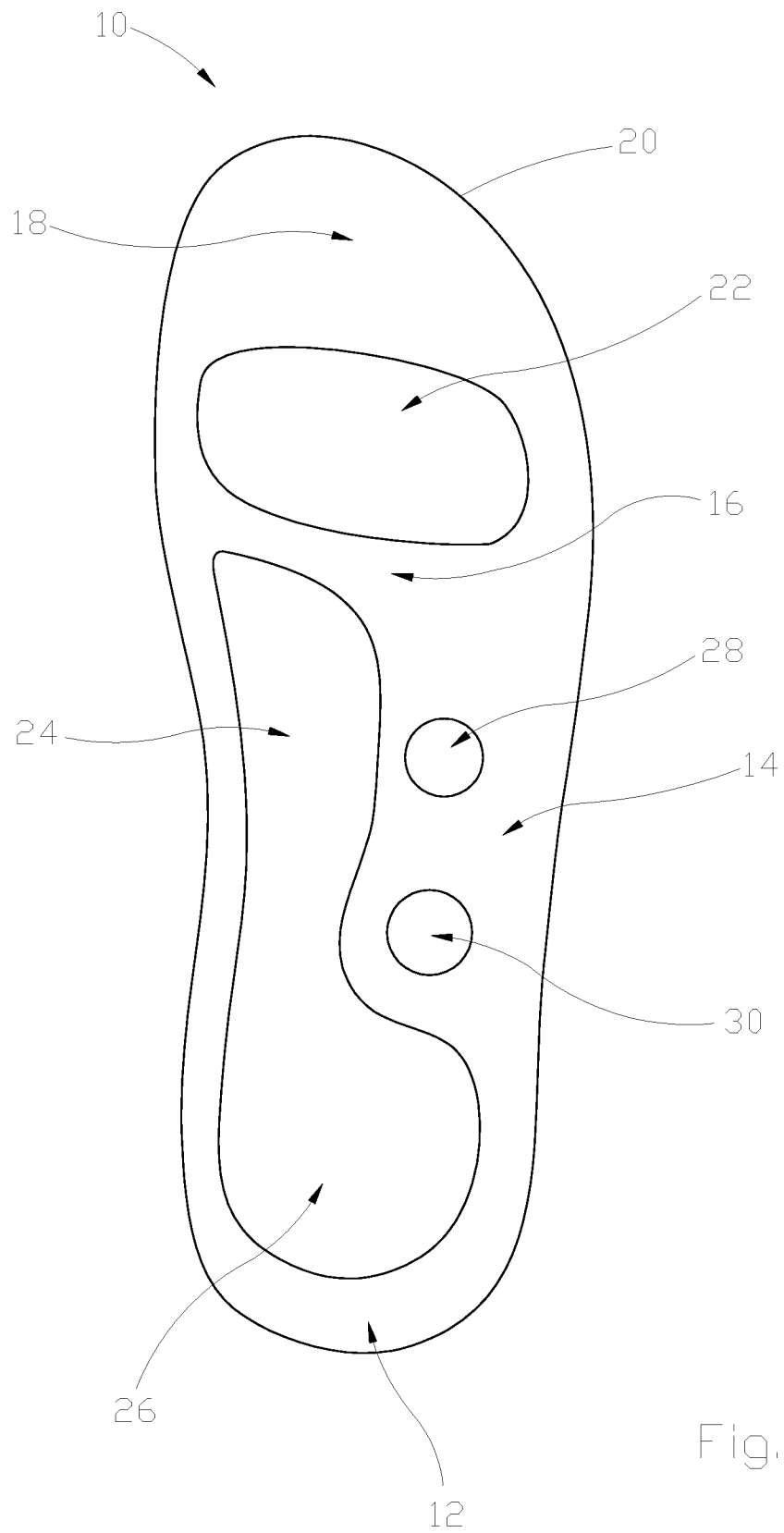
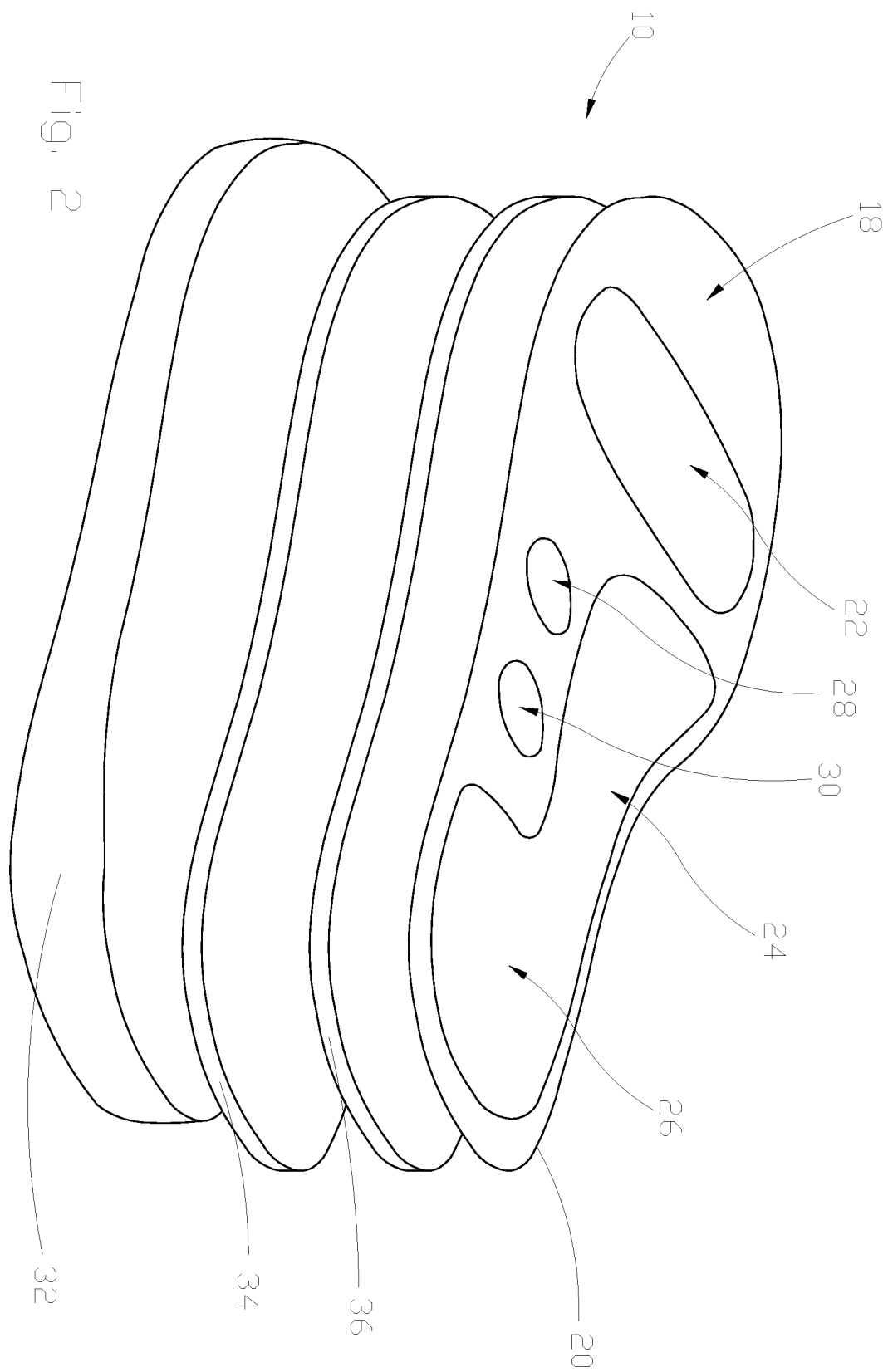


Fig. 1



INTERNATIONAL SEARCH REPORT

International application No
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A. CLASSIFICATION OF SUBJECT MATTER
INV. A43B7/14 A43B17/00
ADD.

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
A43B

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

EPO-Internal, WPI Data

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See patent family annex.

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"&" document member of the same patent family

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INTERNATIONAL SEARCH REPORT

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Information on patent family members

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