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(54) **SHOE INSERT**

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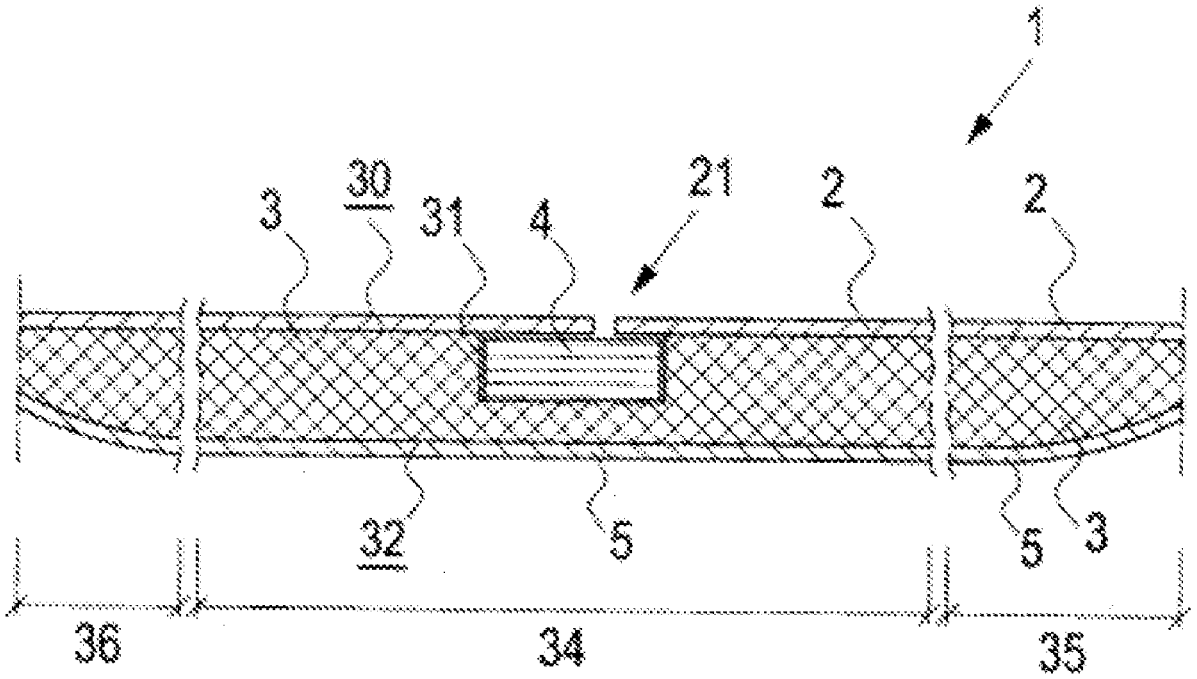
(57) **ABSTRACT**

The invention relates to a shoe insert comprising a cover layer, a damping layer, and an absorbent core for receiving a liquid fragrance, wherein the damping layer has a depression on its upper side for receiving the absorbent core, wherein the cover layer is arranged above, and covers, the damping layer and the absorbent core, wherein the layers are connected to one another, and wherein a hole-shaped recess is formed in the cover layer in the region of the absorbent core for supplying the absorbent core with liquid fragrances.



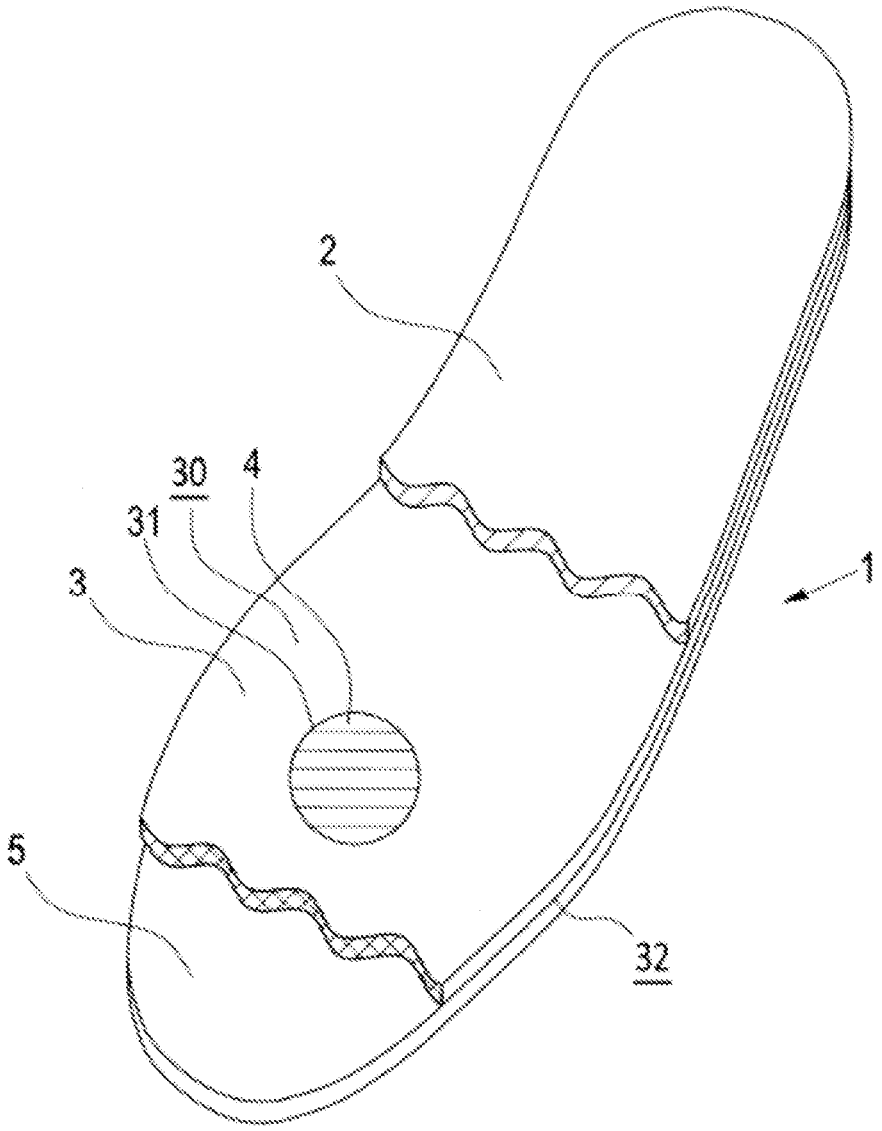


Fig. 1

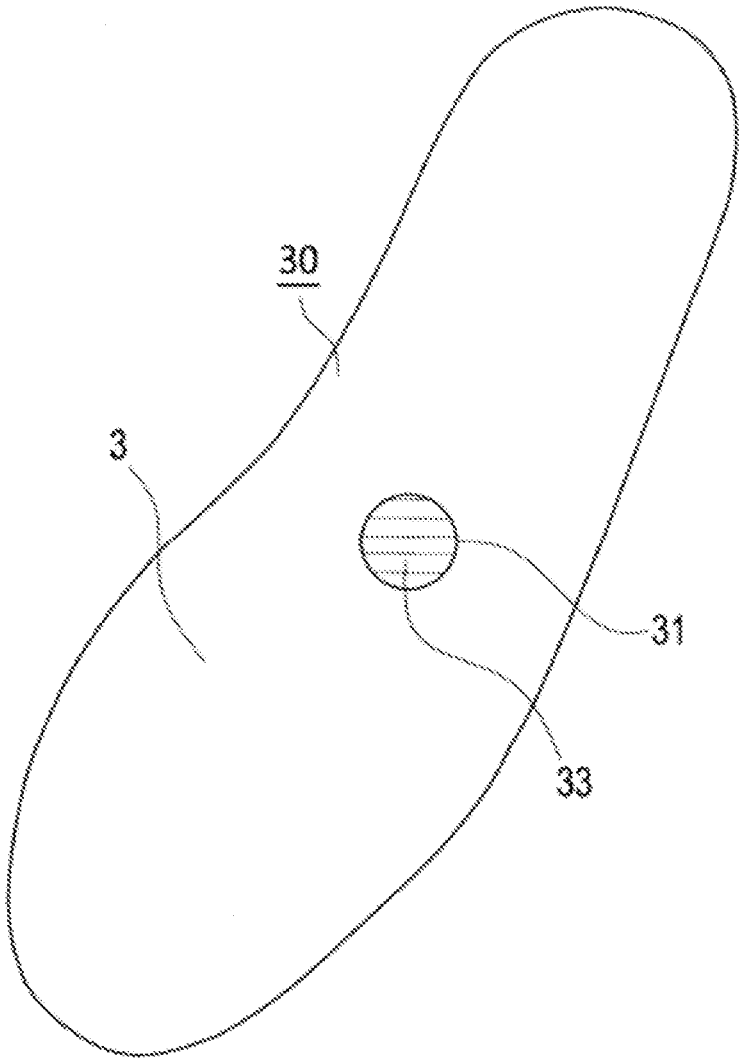


Fig. 2

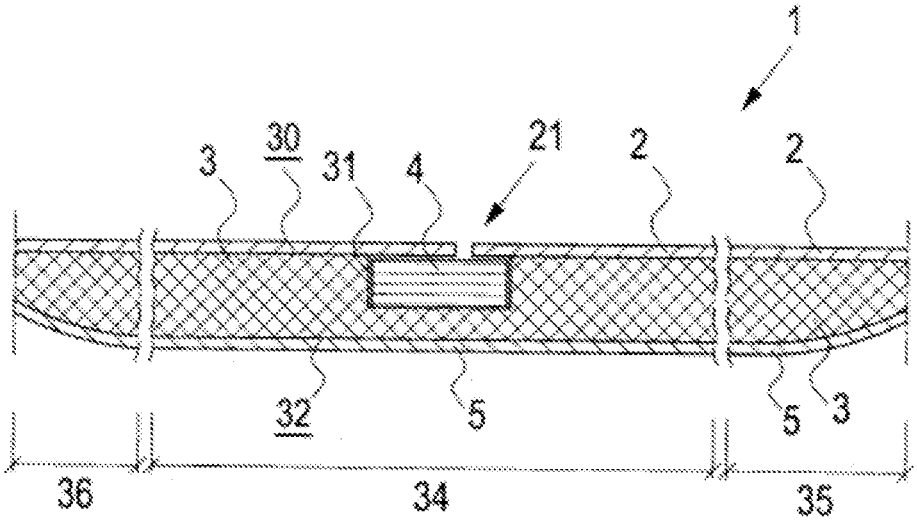


Fig. 3

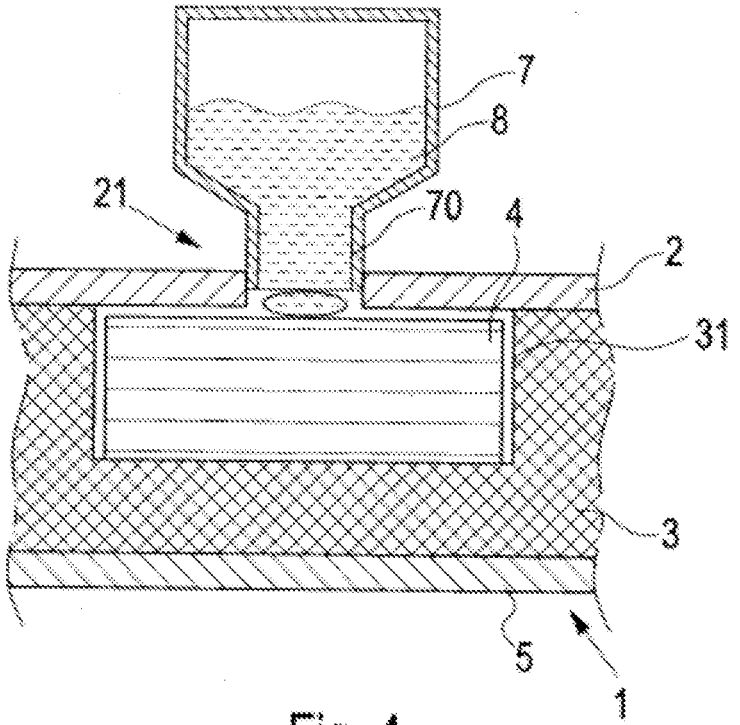


Fig. 4

SHOE INSERT

[0001] The present invention relates to a shoe insert and a system consisting of a left and right shoe insert and a fragrance container.

[0002] A well-known problem in the field of shoe technology is foot odor which is perceived as unpleasant and subsequently also leads to unpleasant smells in the interior of shoes.

[0003] One of the most common causes of foot odor is the secretion of sweat in the region of the feet. Foot odor does not originate directly from the secreted sweat but is instead generated when bacteria decompose the sweat and produce butyric acid in the process.

[0004] The odors in the region of the feet are consequently caused by the release of moisture from the feet, wherein the use of synthetic, non-breathable shoe materials increases the problem of unpleasant odors even further. This is due to the fact that body moisture given off by the foot of the shoe wearer is insufficiently dissipated to the environment by synthetic shoe materials and accumulates in the interior of the shoes. In addition, puberty causes increased perspiration such that increased foot odor occurs.

[0005] Different solutions for treating the problem of foot odor are already known from the prior art. In particular, deodorizing sprays or sprays with fragrances are known which are sprayed directly onto the feet in order to prevent or cover up unpleasant foot odors. The aforementioned sprays have the disadvantage that they only have a short and very limited duration of action such that the sprays have to be applied to the feet several times a day.

[0006] Alternatively, insoles for use in shoes are known from the prior art, wherein fragrances are introduced into the materials of the insole once during the manufacturing process. The products available to date have the disadvantage that the fragrances used have a very artificial effect and/or additionally have a very short fragrance duration such that the effect of the scented shoe insole wears off after a short time and the product is designed as a disposable product.

[0007] On the basis of the known prior art, the problem addressed by the present invention is that of reducing unpleasant foot odor and odor inside shoes and sustainably improving the climate of the shoes.

[0008] According to the invention, the problem is solved by a shoe insert comprising a cover layer, a damping layer, and an absorbent core for receiving a liquid fragrance, wherein the damping layer has a depression on its upper side for receiving the absorbent core, wherein the cover layer is arranged above, and covers, the damping layer and the absorbent core, wherein the layers are connected to one another, and wherein a hole-shaped recess is formed in the cover layer in the region of the absorbent core for supplying the absorbent core with liquid fragrances.

[0009] The design according to the invention has the advantage that the absorbent core for receiving the liquid fragrances can be refilled again and again via the hole-shaped recess when the effect of the applied fragrance has diminished. Furthermore, the proposed design allows the user of the previously described shoe insert to be able to scent the shoe insert as desired in that the user introduces the preferred liquid fragrance. In particular, the user can use a personally preferred brand of perfume or deodorant to scent the shoe insert.

[0010] The liquid fragrances are preferably fragrance oils which have the advantage that they have a longer duration of action in the sense that the fragrances evaporate more slowly. Furthermore, the fragrance oils have a higher viscosity than conventional liquid fragrances such that the fragrance oils have the additional advantage of emerging more slowly from, and being more securely enclosed in, the absorbent core.

[0011] The absorbent core can be sprinkled or supplied with a liquid fragrance through the hole-shaped recess in the cover layer, wherein the fragrance can penetrate into the absorbent core or the fabric and in particular the textile fabric of the absorbent core and be securely stored or enclosed therein for several days or weeks. Starting from the absorbent core, in particular via the hole-shaped recess, the scent can be released into the surrounding shoe space as a gaseous phase and ensures a pleasant freshness in the shoe space and can mask unpleasant odors. In this case, a direct escape of the liquid fragrance is prevented by the provided arrangement of the overlap of the absorbent core with the cover layer, so that the liquid fragrance, for example, cannot be absorbed directly by the sock of the shoe wearer.

[0012] The cover layer can completely cover the underlying damping layer and the absorbent core received therein and only have a hole-shaped recess in the region of the absorbent core arranged below the cover layer. In an alternative form, however, it can also be provided that the cover layer covers only a portion of the upper surface of the damping layer, but at least the surface of the absorbent core.

[0013] The connection of the individual layers of the shoe insert, in particular the aforementioned cover layer and the damping layer, can in particular be realized by gluing the individual layers to one another such that a permanent mechanical connection or adhesion of the layers to one another is ensured. In particular, it can be provided that the absorbent core is glued into the depression in the damping layer. However, the connection of the individual layers and optionally the absorbent core can also be realized using alternative methods, for example, in that the starting material of the damping layer in its still liquid state is joined in a mold during an injection molding process to the absorbent core and/or the further layers of the shoe insert during the manufacturing process and the material of the damping layer is subsequently cured, creating a mechanical connection of the damping layer to the other layers and optionally to the absorbent core.

[0014] According to a preferred embodiment of the invention, the absorbent core can be formed from a textile fabric as a fragrance reservoir. The absorbent core, which is formed from the textile fabric, has the advantage that it can store the fragrance, for example, the fragrance oil, for a specified period of time. The absorbent core thus forms a type of reservoir or storage for the liquid fragrance. Due to the design of the absorbent core as a textile fabric, the fragrance oil is evenly received by and distributed throughout the absorbent core such that the fragrance is released slowly and continuously. Furthermore, the liquid fragrance is not permanently bound in the absorbent core such that it can be removed again from the absorbent core by means of a washing process.

[0015] The absorbent core can be designed to have at least two layers with an upper layer made of a textile fabric and a viscose layer arranged underneath. When a scent drop is applied to the upper layer of the absorbent core, the textile fibers of the textile fabric guide the liquid scent into the subjacent viscose layer in which the scent is stored.

[0016] In one embodiment of the shoe insert according to the invention, it can be provided that it comprises a fabric cover, wherein the fabric cover is arranged as an additional layer below the damping layer and optionally completely covers the underside thereof. In this case, it can also be provided that the aforementioned fabric cover is inseparably connected, for example, glued, to the damping layer.

[0017] The fabric cover has the advantage that the insertion of the shoe insert into the shoe is simplified and the layers of the shoe insert arranged above the fabric cover are supported by the fabric cover during use, thus further increasing the service life of the shoe insert according to the invention. In one embodiment according to the invention, the fabric cover can form the underside of the shoe insert according to the invention.

[0018] The cover layer can be formed from a liquid-impermeable and simultaneously gas-permeable membrane. The membrane designed in this way prevents liquid fragrance from escaping from the absorbent core into the environment but allows the gaseous fragrance to permeate, thus scenting the interior of the shoe.

[0019] It can also be provided that the hole-shaped recess is designed as a valve device. The valve device can be designed such that a supply of liquid fragrance from the environment of the shoe insert into the absorbent core is made possible but leakage of liquid fragrance from the absorbent core is prevented.

[0020] In a preferred embodiment, it can be provided that the cover layer of the shoe insert is formed from a microfiber cover.

[0021] The microfiber cover can absorb the moisture, in particular the sweat secreted by the foot. Furthermore, the microfiber cover can be provided with antibacterial properties, which prevents or reduces the development of odor in the shoe. In addition, the microfiber cover has heat-regulating properties, thus further improving the shoe climate by means of the microfiber cover.

[0022] In one embodiment of the invention, it can be provided that the depression of the damping layer is formed by a circular punched-out portion on its upper side. The circular punched-out portion can, for example, have a diameter in the range of 1-2 cm, preferably of about 1.3 cm.

[0023] In a preferred embodiment of the invention, it is provided that the damping layer is made substantially of ethylene vinyl acetate (EVA). The use of ethylene vinyl acetate as the basic material for the production of the damping layer has the advantage that the EVA material provides the shoe insert with a damping and simultaneous restoring effect. The EVA damping layer can have a layer thickness in the range from 1 mm to 5 mm; particularly preferably, the layer thickness is around 2 mm in the middle region of the shoe insert and is thinner all around in the edge region of the shoe insert.

[0024] In a particularly preferred embodiment, it can be provided that the layers of the shoe insert are connected by means of a neoprene adhesive or, alternatively, by means of a solvent-free spray adhesive system.

[0025] According to the invention, it can be provided that the edges of the damping layer taper off all around to be thinner than in the middle of the damping layer. In the context of the present application, the aforementioned feature of tapering off to be thinner means that the thickness of the damping layer in the edge region of the damping layer tapers continuously from a maximum thickness of the damping layer in the middle region of the damping layer to a minimum thickness at the edge. In particular, in the edge region on the lower and/or upper side of the damping layer, convex or concave surface profiles can be provided for adapting the shape of the shoe insert to an existing footbed.

[0026] In a further preferred embodiment, the layers, the absorbent core, and the adhesive bond of the shoe insert according to the invention can be configured such that they are machine washable, in particular machine washable at 30° C.

[0027] The design as a machine-washable shoe insert has the advantage that different scents of the liquid fragrances can be used successively with one and the same shoe insert, and the shoe insert according to the invention is thus designed as a reusable product. The fragrance introduced into the absorbent core can also be completely neutralized or washed out in the washing machine, so that the shoe insert can be used again. The aforementioned embodiment also has the advantage that the shoe insert can also be disinfected and thoroughly cleaned during the washing process by adding suitable washing additives.

[0028] In a particularly preferred embodiment, it can be provided that the dimensions of the absorbent core correspond substantially to the dimensions of the depression in the damping layer, and the absorption core is embedded in the depression.

[0029] Due to the fact that the dimensions of the absorbent core are substantially adjusted to the dimensions of the recess, the absorbent core in the shoe or in the shoe insert cannot be felt by the user, which further increases the wear comfort of the shoe insert. Furthermore, due to the embedding in the depression, the absorbent core cannot slip or get lost during use. For this purpose, the absorbent core can be embedded in the depression in particular by adhesive bond. Embedding also has the advantage that the absorbent core is prevented from being squeezed out during use of the shoe insert according to the invention such that it can be ensured that the respective fragrance remains enclosed for as long as possible with the shoe insert according to the invention. When the shoe insert is viewed in cross section, the upper side of the absorbent core is preferably flush with the upper side of the damping layer such that a pressure exerted by the foot of the shoe wearer on the shoe insert according to the invention is evenly distributed over the upper surface of the shoe insert and the compressive force exerted locally on the absorbent core is reduced. The upper side of the absorbent core in cross section of the shoe insert according to the invention is particularly preferably designed to be slightly recessed with respect to the surrounding surface of the damping layer such that the pressure exerted on the absorbent core by the foot of the shoe wearer is further reduced or entirely prevented.

[0030] In a further preferred embodiment of the shoe insert according to the invention, it can be provided that the layers have substantially the shape and the dimensions of a footbed of a left or right shoe and are designed as an insole.

[0031] The layers of the shoe insert particularly preferably all have the same shape and surface dimensions, so that the layers lie congruently on top of one another and can be permanently connected to one another.

[0032] The invention further relates to a system comprising a left and a right shoe insert according to the invention having the features according to the invention as described above, and at least one fragrance container for receiving a

liquid fragrance, wherein the fragrance container has a container outlet adapted to the hole-shaped recess of the shoe insert, and wherein the liquid fragrance can be supplied to the absorbent core of the shoe insert through the container outlet via the hole-shaped recess.

[0033] In the Drawings:

[0034] FIG. **1** is a partially-sectioned perspective view of a first exemplary embodiment of a shoe insert according to the invention;

[0035] FIG. **2** is a plan view of an exemplary embodiment of the damping layer of the shoe insert according to the invention;

[0036] FIG. **3** is a cross section of a second embodiment of a shoe insert according to the invention; and

[0037] FIG. **4** is a partial section from a shoe insert according to the invention together with a fragrance container.

[0038] FIG. **1** shows a first exemplary embodiment of a shoe insert according to the invention in a schematic three-dimensional view, wherein the individual layers are shown partially cut away for a better understanding of the selected layer structure.

[0039] According to FIG. **1**, the first exemplary embodiment of the shoe insert **1** according to the invention comprises a cover layer **2** as the uppermost layer of the shoe insert **1** and a damping layer **3** in combination with a further fabric cover **5** which is arranged as an additional layer below the damping layer **3** and completely covers its underside **32** in the depicted embodiment. In the depicted embodiment, the damping layer **3** has a depression **31** on its upper side **30**, in which the absorbent core **4** is accommodated, wherein the cover layer **2** is arranged above, and covers, the damping layer **3** and the absorbent core **4**, wherein in FIG. **1** part of the cover layer **2** and the damping layer **3** have been cut away for better illustration.

[0040] As can also be seen from FIG. **1**, the depression **31** for receiving the absorbent core **4** is formed by a circular punched-out portion on the upper side **30** of the damping layer **3**. In the depicted exemplary embodiment according to FIG. **1**, the layers **2**, **3** and **5** are in this case based substantially on the shape and dimensions of a footbed of a left shoe, wherein the shoe insert in the depicted embodiment is designed as an insole. In the depicted embodiment, the individual layers **2**, **3**, **5** lie on top of one another and are inseparably connected to one another, for example, by providing an adhesive bond using neoprene adhesive.

[0041] FIG. **2** shows the design of the damping layer **3** according to the invention, wherein the damping layer **3** in the depicted embodiment has a depression **31** in the form of a circular punched-out portion **33** on the upper side **30** of the damping layer **3**. As can be seen from the comparison of FIGS. **1** and **2**, both the position and the dimensions of the depression **31** on the surface **30** for receiving the absorbent core **4** can be varied according to the invention. In particular, the depression **31** and thus the absorbent core **4** can be positioned in regions of the shoe insert **1** in which, due to the geometry of the arch of the foot of the shoe wearer, a low local pressure is to be expected during use.

[0042] FIG. **3** shows a second exemplary embodiment of a shoe insert **1** according to the invention, wherein the shoe insert **1** comprises a cover layer **2** and a damping layer **3** as well as an additional layer formed by the fabric cover **5** below the damping layer **3**, which completely covers the underside **32** of the damping layer **3**. As can be seen from the cross section in FIG. **3**, the damping layer **3** has a depression **31** on its upper side **30**, in which the absorbent core **4** is accommodated. In the depicted exemplary embodiment, the cover layer **2** completely covers the damping layer **3** but, in the region of the absorbent core **4**, it has a valve device formed, by way of example, by a hole-shaped recess **21**, via which the absorbent core **4** can be supplied with liquid fragrances **8** (not shown in FIG. **3**). The exemplary embodiment in FIG. **3** of the shoe insert **1** according to the invention has a middle region **34** and edge regions **35** and **36**, wherein the damping layer **3** in the edge regions **35** and **36** tapers from a maximum thickness in the middle region **34** to a minimum thickness in the region of the peripheral edge of the shoe insert **1** according to the invention, and the edges **35** and **36** of the damping layer **3** taper off all around to be thinner than in the middle of the damping layer **3**.

[0043] As can also be seen from FIG. **3**, the absorbent core **4** has substantially the dimensions of the depression **31** of the damping layer **3**, wherein the absorbent core **4** is embedded in the depression **31**. In the embodiment provided, the absorbent core **4** is designed to be minimally smaller than the dimensions of the depression **31** such that the absorbent core **4** can be glued into the depression **31** via an adhesive such as a neoprene adhesive.

[0044] FIG. **4** shows parts of a system according to the invention, comprising a left and right shoe insert **1** according to the invention and a fragrance container **7**. For the sake of clarity, only a partial section of a shoe insert **1** according to the invention in combination with a fragrance container **7** is shown in FIG. **4**, wherein the shoe insert **1** according to the invention is once again designed to have a cover layer **2** arranged on top, a subjacent damping layer **3**, and a fabric cover **5** forming an additional layer. The absorbent core **4** for receiving the liquid fragrance **8** is arranged in the depression **31** of the damping layer **3**. FIG. **4** shows the process of supplying the absorbent core **4** with the fragrance **8**. In this case, the fragrance **8** is accommodated in the fragrance container **7** as a liquid and introduced into the absorbent core **4** via the container outlet **70** through the hole-shaped recess **21** in the cover layer **2**. The drawing shows the application of a liquid drop of the fragrance **8** to the upper surface of the absorbent core **4**. For this purpose, the container outlet **70** is adapted to the shape and dimensions of the hole-shaped recess **21** of the cover layer **2** such that accidental application of fragrance **8** to the cover layer **2** is prevented.

1. A shoe insert comprising:

a cover layer;

a damping layer; and

an absorbent core configured to receive a liquid fragrance,

wherein the damping layer has a depression on its upper side configured to receive the absorbent core, wherein the cover layer is arranged above, and covers, the damping layer and the absorbent core, wherein the layers are connected to one another, and wherein a hole-shaped recess is formed in the cover layer in the region of the absorbent core for supplying the absorbent core with liquid fragrances.

2. The shoe insert according to claim **1**, wherein the absorbent core is formed from a textile fabric as a fragrance reservoir.

3. The shoe insert of claim **1**, wherein the absorbent core further comprises an upper layer made of a textile fabric and a viscose layer arranged underneath the upper layer.

4. The shoe insert of claim **1**, comprising a fabric cover, wherein the fabric cover is arranged as an additional layer below the damping layer and completely covers an underside of the damping layer.

5. The shoe insert according to claim **1**, wherein the cover layer further comprises a liquid-impermeable and simultaneously gas-permeable membrane.

6. The shoe insert of claim **1**, wherein a valve device is located in the hole-shaped recess.

7. The shoe insert of claim **1**, wherein the cover layer further comprises a microfiber cover.

8. The shoe insert of claim **1**, wherein the depression is formed by a circular punched-out portion on the upper side of the damping layer.

9. The shoe insert of claim **1**, wherein the damping layer is made substantially of ethylene vinyl acetate.

10. The shoe insert of claim **1**, wherein the layers are connected by a neoprene adhesive.

11. The shoe insert of claim **1**, wherein the edges of the damping layer taper off all around to be thinner than in the middle of the damping layer.

12. The shoe insert of claim **1**, wherein the layers, the absorbent core, and the adhesive bond are designed such that they are machine washable.

13. The shoe insert of claim **1**, wherein the dimensions of the absorbent core correspond substantially to the dimensions of the depression in the damping layer, and the absorbent core is embedded in the depression.

14. The shoe insert of claim **1**, wherein the height dimension of the absorbent core is designed to be smaller than the depth dimension of the depression, so that the upper surface of the absorbent core is recessed in relation to the upper surface of the damping layer.

15. The shoe insert of claim **1**, wherein the layers have substantially the shape and dimensions of a footbed of a left or right shoe and are designed as an insole.

16. A system comprising:

a left and a right shoe insert of claim **1**; and

a fragrance container, wherein the fragrance container has a container outlet adapted to the hole-shaped recess, and wherein the liquid fragrance can be supplied to the absorbent core through the container outlet via the hole-shaped recess.

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