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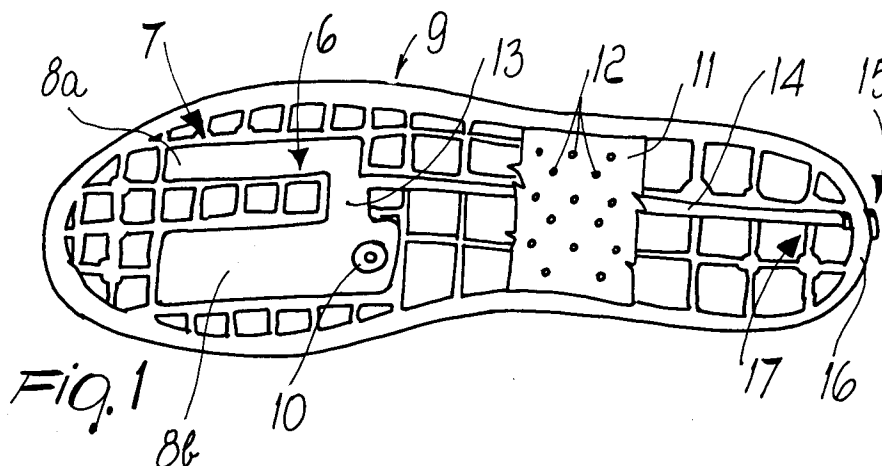
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I-20123 Milano (IT)(54) **Device for internal ventilation of shoes.**

(57) The present invention relates to a device that allows the internal ventilation of shoes of the type including a sole (3) with which an upper (4) is associated. The device (1) has an air bag (5) associated with the sole (3) at the front region. The air bag (5) is connected to the inside of the shoe by

means of a first intake valve (10) and to the outside of the shoe by means of a second discharge valve (15). While walking it is therefore possible to aspirate air and expel the associated moisture that are present inside the shoe, allowing to maintain an optimum condition for the foot inside the shoe.

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The present invention relates to a device that allows internal ventilation of shoes.

The problem of perspiration of the foot when walking is currently felt in the use of shoes.

A non-optimum condition accordingly occurs for the foot inside the shoe; the foot is constantly in a humid environment when wearing the shoe.

As a partial solution to this drawback, shoes are known that are predominantly used for gymnastics and have an upper made of a material that allows a limited flow of air through it; however, these solutions have some drawbacks: on one hand it is not possible to achieve optimum ventilation of the inside of the shoe, thus again producing non-optimum conditions for the foot inside said shoe.

Secondly, said material can allow water infiltrations in case of rain, further aggravating the condition for the foot.

The aim of the present invention is therefore to solve the above described technical problems, eliminating the drawbacks of the mentioned known art and thus providing a device that allows to achieve optimum internal ventilation of a shoe and particularly allows to expel the moisture present inside it.

Within the scope of this aim, an important object is to provide a device that allows the foot to be placed in an environment that facilitates its optimum transpiration.

Another important object is to provide a device that in particular allows optimum ventilation in the region of the sole of the foot.

A further important object is to provide a device that allows to drain any water accumulated inside the shoe.

Another important object is to provide a device that is reliable and safe in use and can be easily applied at a part of the shoe.

Another object is to provide a device that has modest production costs and can be manufactured with conventional known equipment.

With this aim, these objects and others in view, which will become apparent hereinafter, there is provided, according to the present invention, a device for the internal ventilation of shoes that include a sole with which an upper is associated, characterized in that it is constituted by at least one air bag located at the front region of said sole, said at least one air bag being connected to the inside of said shoe by means of at least one first intake valve and to the outside of said shoe by means of a second discharge valve.

Further characteristics and advantages of the invention will become apparent from the following detailed description of a particular but not exclusive embodiment thereof, illustrated only by way of non-limitative example in the accompanying drawings, wherein:

figure 1 is a plan view of the sole with the air bag associated;

figure 2 is a sectional view, taken along the longitudinal median plane, of the sole at the heel region;

figure 3 is a lateral perspective view of the air bag;

figure 4 is a plan view of a different embodiment of the air bag.

With reference to the above figures, the reference numeral 1 designates a device for the internal ventilation of a shoe 2 having a sole 3 with which an upper 4 is associated.

The device has at least one air bag, designated by the reference numeral 5, which is arranged at the inner lateral surface 6 of the sole 3 in a suitable cavity 7 formed thereon.

In the particular embodiment illustrated in figure 1, said air bag 5 is thus essentially U-shaped and its arms 8a and 8b are arranged at the front region 9 of the shoe 2 that lies below the front central part of the user's foot.

The air bag 5 is connected to at least one first intake valve 10 which is directed toward an optional overlying insole 11 that has appropriate holes 12; said first valve 10 is preferably associated where the arm 8b and the base 13 of said air bag join.

Said air bag is furthermore connected, by means of a suitable first duct 14 located at the connection between the arm 8a and the base 13, to a second air discharge valve 15 which is associated at the perimetric tang or edge 16 of the sole 3, preferably in the heel region 17.

As an alternative, the air bag 5 can have, as shown in figure 4, a variously curved shape so as to affect the entire region of the sole of the foot and so that it can accordingly be associated with a support shaped like an insole.

For this purpose, the air bag 5 can have, at the front region 9, a main chamber 18 which is connected to a second duct 19 located approximately at the plantar arch region of the foot and extending along the entire perimetric region of the foot.

Suitable third ducts 20a and 20b furthermore extend from said second duct 19 starting from the ends of the tip and of the heel and are arranged approximately longitudinally with respect to the support.

In this embodiment, the air bag 5 is thus associated with a support that is shaped like an insole so that it can be placed at the inner lateral surface 6 of the sole.

In this case, too, the air bag 5 has a first intake valve 10, located at the main chamber 18, for aspirating air from the inside of the shoe, and a first duct 14 for connection to a second discharge valve 15 which is associable at the perimetric ridge of the sole, preferably in the lateral region of the

plantar arch.

Use of the device according to the invention is thus very simple: after optionally embedding the second valve 15 at the perimetric ridge 16 of the sole 2 during its injection, the first duct 14 and therefore the air bag 5 are connected to said valve, arranging the air bag in the suitable cavity 7 formed on the sole.

The appropriately perforated insole 11 is then optionally placed on top.

While walking, there is a step during which the air bag 5 is compressed, expelling the air contained inside it by means of the second valve 15, and then a subsequent step during which air is drawn inside the air bag 5 through the first valve 10 that is connected to the inside of the shoe.

In this manner, a flow of air is produced from the inside of the shoe toward the outside, consequently expelling the moisture produced while walking or running.

The solution shown in figure 4 also achieves the intended aim and objects, and in this case it is also possible to use multiple first intake valves, locating them in the desired points so as to produce the best air flow.

The materials and the dimensions that constitute the individual components of the device may naturally also be the most pertinent according to the specific requirements.

Where technical features mentioned in any claim are followed by reference signs, those reference signs have been included for the sole purpose of increasing the intelligibility of the claims and accordingly such reference signs do not have any limiting effect on the scope of each element identified by way of example by such reference signs.

Claims

1. Device for the internal ventilation of shoes having a sole with which an upper is associated, characterized in that it comprises at least one air bag located at the front region of said sole, said at least one air bag being connected to the inside of said shoe by means of at least one first intake valve and to the outside of said shoe by means of a second discharge valve.
2. Device according to claim 1, characterized in that it is constituted by at least one air bag which is arranged at a cavity formed on the inner lateral surface of said sole.
3. Device according to the preceding claims, characterized in that said air bag is U-shaped and its arms are arranged at the front central region of said shoe and are joined by a base

which is adjacent to the pre-arch region of the foot.

4. Device according to claims 1 and 3, characterized in that said air bag is connected to at least one first intake valve which is directed toward an overlying perforated insole and is preferably located at the pre-arch region of the foot.
5. Device according to claims 1 and 4, characterized in that said air bag is connected, by means of a suitable first duct, to a second discharge valve which is associated at the perimetric ridge of said sole and/or upper and is therefore connected to the outside.
6. Device according to claim 1, characterized in that said air bag is associated with a support shaped like an insole, said air bag being constituted by a main chamber which is located at the front central region of the sole.
7. Device according to claims 1 and 6, characterized in that said main chamber is connected to a second duct which is located approximately at the plantar arch region of the foot and extends perimetrically along the entire region lying beneath the foot.
8. Device according to claims 1 and 7, characterized in that third longitudinal ducts extend from said second duct and start approximately from the ends of the tip and heel of the shoe.
9. Device according to claims 1 and 8, characterized in that said main chamber has at least one first valve for aspirating air and/or perspiration liquid from the inside of said shoe.
10. Device according to claims 1 and 9, characterized in that said main chamber has a first duct for connection to at least one second discharge valve that is associable with said sole and/or upper and therefore is connected to the outside.
11. Device according to claims 1 and 5, characterized in that said second discharge valve is located at the heel region.
12. Device according to claims 1 and 10, characterized in that said second discharge valve is located at the lateral region of the plantar arch.
13. Device according to claims 1 and 5, characterized in that said second discharge valve can

be located at a cavity or seat which is connected to the outside and is formed on said sole.

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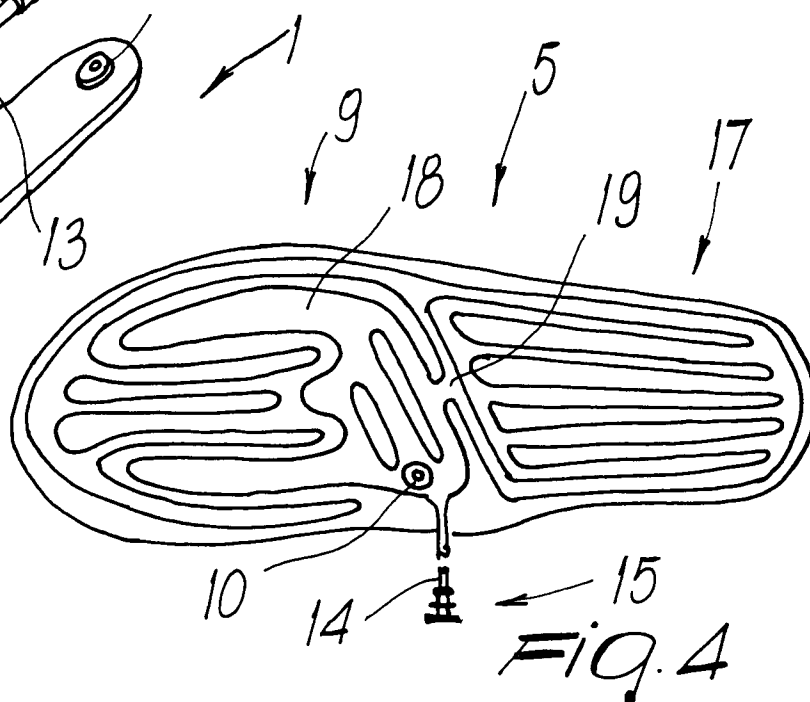
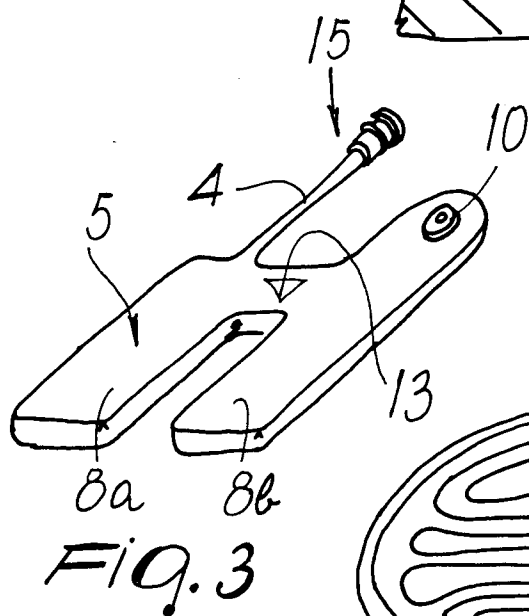
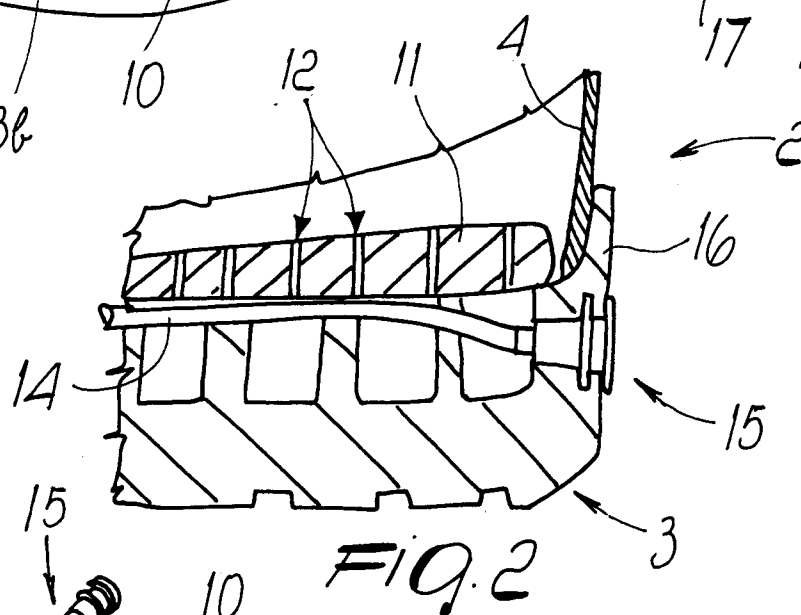
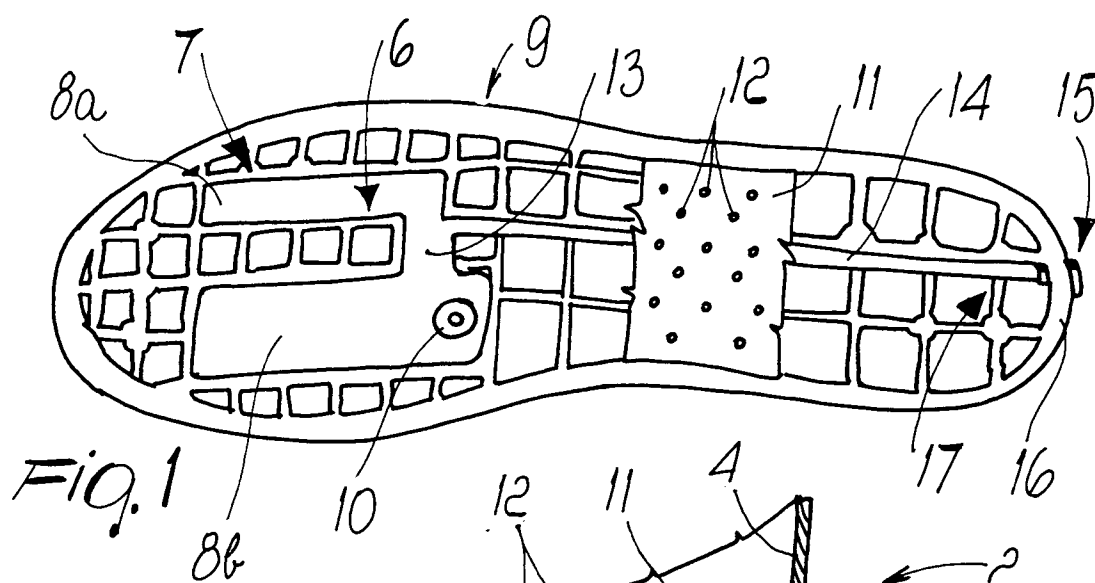
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EUROPEAN SEARCH REPORT

Application Number
EP 94 10 5259

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int.Cl.6)
X	GB-A-2 247 391 (TRIPLE THREE LEISURE) * the whole document * ---	1,2,4,9	A43B7/06 A43B7/08 A43B17/08
X	WO-A-86 03951 (EL SAKKAF) * the whole document * ---	1,2,4,5,9	
A	US-A-4 860 463 (HUANG PIN) * the whole document * ---	1,5, 11-13	
A	US-A-5 195 254 (LIOU Y. TYNG) * the whole document * ---	1	
A	US-A-4 974 342 (TOSHIMITSU NAKAMURA) * the whole document * -----	1	
			TECHNICAL FIELDS SEARCHED (Int.Cl.6)
			A43B
The present search report has been drawn up for all claims			
Place of search THE HAGUE		Date of completion of the search 2 September 1994	Examiner Declerck, J
CATEGORY OF CITED DOCUMENTS X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document			