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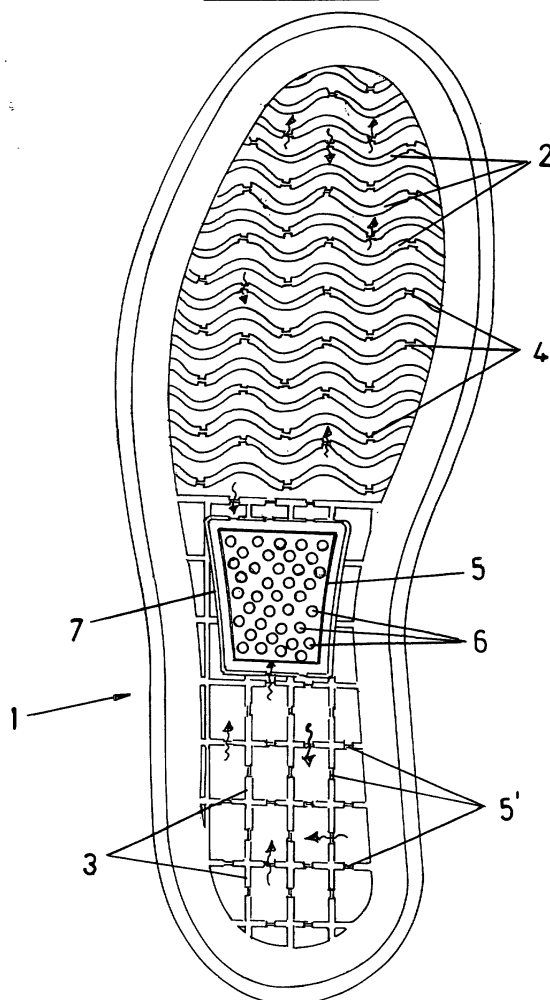
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(54) **A sole for footwear with an improved aeration system**

(57) A sole for footwear provided with an aeration system to permit the fresh air to reach the entire lower foot surface of the user, is described. Accordingly, a perforated portion (5) has been provided in the bridge area which on its inner face is in fluid connection with the sole and heel areas, where a circuit has been formed for air flow, thanks to recesses or notches (4,5) made in the respective economisers (2,3). An internal housing permits the arrangement of a Goretex plate intended to allow moisture circulation in a single direction, from inside to outside.

FIG 1



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Description

Object of the Invention

[0001] The present invention refers to a sole for footwear with an improved aeration system, contributing basic novel features and important benefits with respect to known soles used for the same purposes in the current state of the art.

[0002] More specifically, the invention proposes the development of a sole provided with a system allowing an effective aeration and transpiration of the user's feet, thanks to a predetermined perforated area which, according to the invention, will be located in the part of the sole bridge, preventing possible contact with the ground, which could soil or block the holes, through which the exchange between inside and outside of the footwear and the external space is produced and from where (and towards) the exchanged air circulates (returns) longitudinally, in both directions, until the heel and sole areas, thanks to the specific shapes adopted by the internal economisers.

[0003] The field of application of the invention obviously includes the footwear manufacturing industry.

Background of the Invention

[0004] It is known that in fact the use of closed footwear almost always involves excessive sweating of the user's feet, a permanent source of annoyance, smells and sometimes other problems of foot health. To solve this type of problem, footwear manufacturers are making considerable efforts tending to provide better materials and, whenever possible, means facilitating improved aeration of the feet, maintaining them fresher and in conditions preventing extra sweating.

[0005] According to a known embodiment in the state of the art, a sole may incorporate passing holes distributed throughout the sole, in the spaces existing between the protruding formations usually given to soles, and through which an exchange of air from inside to outside is possible, hence obtaining freshening of at least this area and therefore, improving the footwear use conditions. However, this embodiment also involves other practical problems, since, although in general they do not come into contact with the ground, due to the formation protruding from the sole bottom, the truth is that when they retain dirt or are blocked for some reason, it is very difficult to clean them, precisely due to the fact that the areas in which they are located are generally narrow, not permitting easy access. Moreover, as will be understood, there are many other drawbacks also derived from the fact that the sole area in which they are located is that supporting the greatest pressure from the user's foot, especially when he is moving, so that this fact also hinders the entrance of air. Anyway, the execution of holes in the sole bottom area only provides local aeration and not the entire lower surface of the foot.

[0006] According to the above, the present invention has been proposed to develop a sole for footwear, permitting currently existing problems to be solved. This object has been reached with a sole, which in a predetermined area, corresponding to the bridge, is intended to be perforated with a plurality of passing holes. This offers the benefit that on normally being an elevated area between the sole bottom and the heel, it is never in continuous contact with the ground, so that it is difficult that the holes are directly accessible to dirt and other elements. Anyway, as it is generally a smooth surface in most classes of footwear existing, possible dirt that may be introduced in the holes of the perforated area, may be easily removed. Moreover, according to the invention, along the inside face of the sole and matching the perforated area, the arrangement of a protection plate of goretex may be foreseen or of any other conventional material, so that according to its characteristics of permitting passage in a single direction internal sweat may leave whilst the entry of external humidity is prevented.

[0007] It is an advantage that the sole of the invention provides complete aeration of the entire lower surface of the feet. For this purpose, from the perforated exchange area made in the sole bridge, a circuit and passage has been made which extends longitudinally towards both adjacent areas of the sole bottom and heel. This circuit is obtained by the execution of numerous recesses and notches, like stepped advantages, in each one of the sole economisers. In fact, according to the preferable embodiment, the sole economisers are extended in a transverse and parallel sense to each other, arranging these recesses in determined positions, through which air passage is permitted in both directions with the own movement of the user's feet. In this simple way, an effective, practical and easy solution has been given to the problem currently existing.

Brief Description of the Drawings

[0008] These and other features and advantages of the invention may be understood more easily from the following detailed description of a preferred embodiment, given exclusively as an illustrative and non-limiting example, referring to the attached drawings wherein;

Figure 1 shows an upper plan schematic view of a sole constructed in accordance with the present invention, and

Figure 2 show another lower plan schematic view of the same sole as that shown in Figure 1.

Description of the Preferred Embodiment

[0009] The detailed description of the preferred embodiment of this invention will be described, as has already been mentioned, taking as a reference the attached drawings, in which the same numerical referenc-

es are used to designate equal or similar parts. Firstly, observing Figure 1, an upper plan view of a sole of the invention may be seen generally indicated with the reference number 1 and whose general configuration corresponds to that of any known sole. Conventionally, the sole has distributed throughout its inside space, numerous economising components, generally indicated with reference numbers 2 and 3, extended transversely and which in the sole bottom area consists of parallel undulated shapes whilst in the heel area, they are rectilinear shapes, also parallel and crossed by other shapes, likewise parallel and extended in a longitudinal direction. Anyway, all these economiser components have recesses or notches 4,5', in different positions, several of these notches corresponding to each economiser component.

[0010] Different to the front areas, the bridge has an area 5 with predetermined dimensions, that in general may adopt any shape considered relevant and in which passing holes 6 have been made, distributed over the surface of said area, these holes being precisely the ones entrusted with letting air circulate between the inside space and the outer surroundings. The mentioned area 5, may be surrounded, if desired, by an elevated protruding shape, closed over itself, as indicated by reference number 7, by means of which a housing is provided for the final fitting of a goretex plate, as previously explained, which may be fixed with adhesive or any other conventional means, making it possible for moisture to circulate only in one direction, that is, from inside to outside.

[0011] Along the lower surface of the sole, as may be appreciated in Figure 2 of the drawings, area 5 where the passing holes 6 are distributed, has no limit whatsoever and the bridge area is generally smooth. This circumstance favours the cleaning of said holes if dirt enters them and could even block them.

[0012] The arrangement of the holes 6 in the bridge area and their communication with the entire surface of the sole bottom and heel areas, thanks to the recesses 4, 5' made in the internal economisers permits the distribution of air throughout all the sole and the freshening of all the lower surface of the user's foot. The movement of the foot itself and the bending of the sole, pushes the air longitudinally in both directions, as indicated by the arrows shown on some of the mentioned recesses 4, 5', as well as in a transverse direction in the heel area, as also shown with other arrows. Therefore, aeration is complete, preventing the drawbacks already indicated and the feeling of comfort and freshness for the user is considerably increased.

[0013] Figure 2 also shows other holes 8 made in determined positions of the sole, in the narrow channels left between protruding shapes 9 of the type, mostly used in footwear soles. This representation of holes 8 corresponds to that known in the state of the art and has only been carried out to illustrate the previous comments, that is, to understand the comparative difficulty

existing with the conventional art, compared with this invention. In fact, the position of the holes 8, in general affecting all the sole bottom area, only permits local aeration, hindered by the pressure of the front itself and therefore an incomplete solution for existing problems, besides the difficult cleaning, intrinsic to their location. However, the arrangement of holes in the bridge area, sufficiently separated from the soles and with a smooth outside surface, together with the easy of air circulation throughout the total inside space of the sole, thanks to the recesses or notches 4,5', allows the aeration problems of the user's feet to be efficiently solved, meaning a more comfortable and beneficial use of the sole constructed according to the teachings of the present invention.

Claims

1. A sole for footwear, provided with an improved aeration system, applicable to any type of footwear, by which an air exchange is provided between the inside space and the surroundings, facilitating the aeration of the total lower surface of the user's feet, **characterised in that** said sole has an area (5) with predetermined dimensions, located in the area of the sole bridge, in which a plurality of passing holes (6) have been made, so that along the outside fall, the portion (5) has a smooth surface as a continuation of the rest of the area, hence allowing easy cleaning and maintenance of the holes in case of blockage or picking up dirt, while a protruding wall (7) has been foreseen along the inside face, surrounding said area (5), closed over itself and in fluid communication with an air circulation passage from and towards said perforated area (5), said air circulation passage comprising a plurality of recesses (4,5') respectively carried out in the economisers (2,3) of the sole bottom and heel areas.
2. A sole in accordance with claim 1, **characterised in that** the housing formed by said protruding wall (7) permits the housing of a Goretex or similar plate inside it, to allow the passage of moisture in one direction only, from inside to outside, it being possible for said plate to be fixed in said position with an adhesive or similar product.

FIG 1

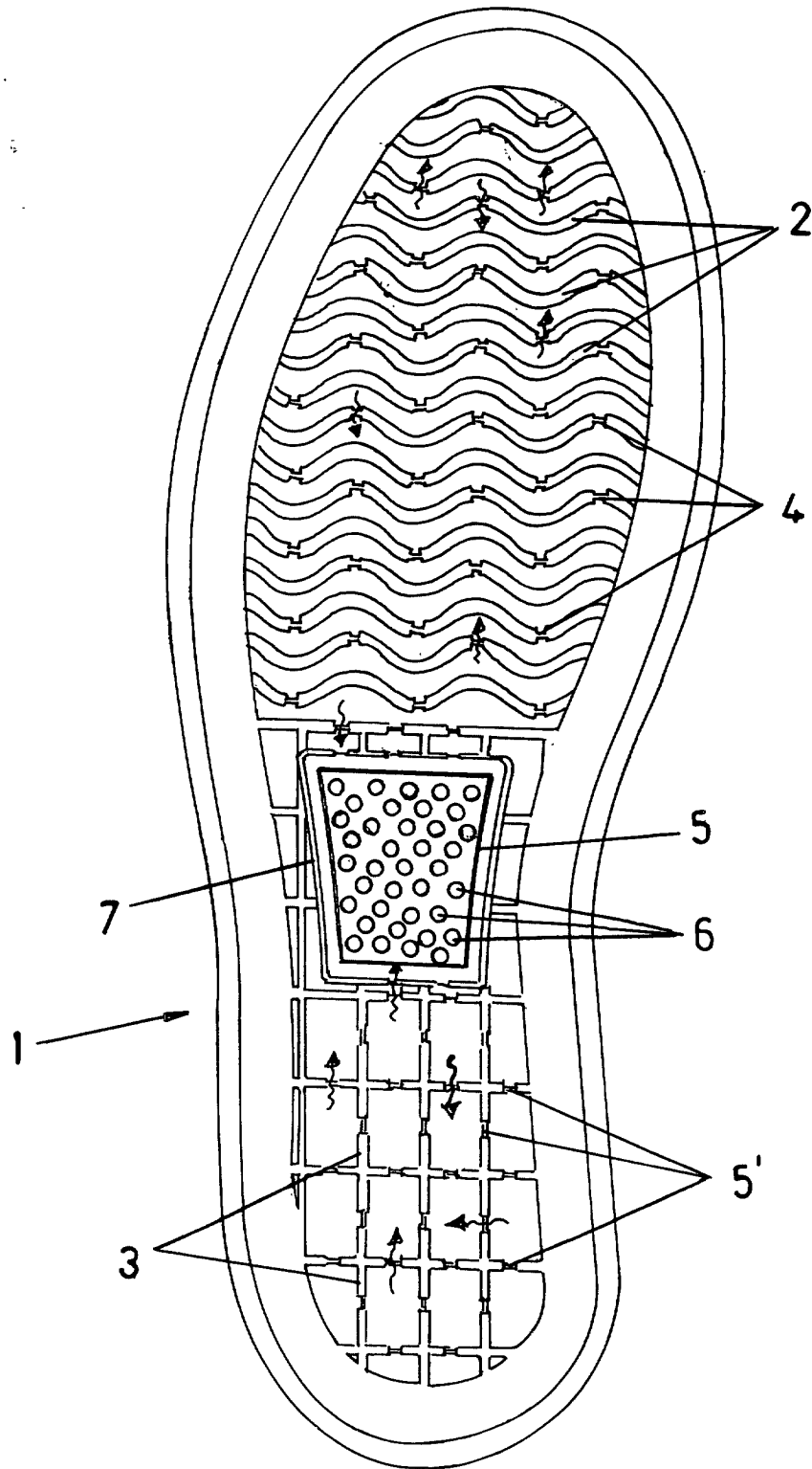
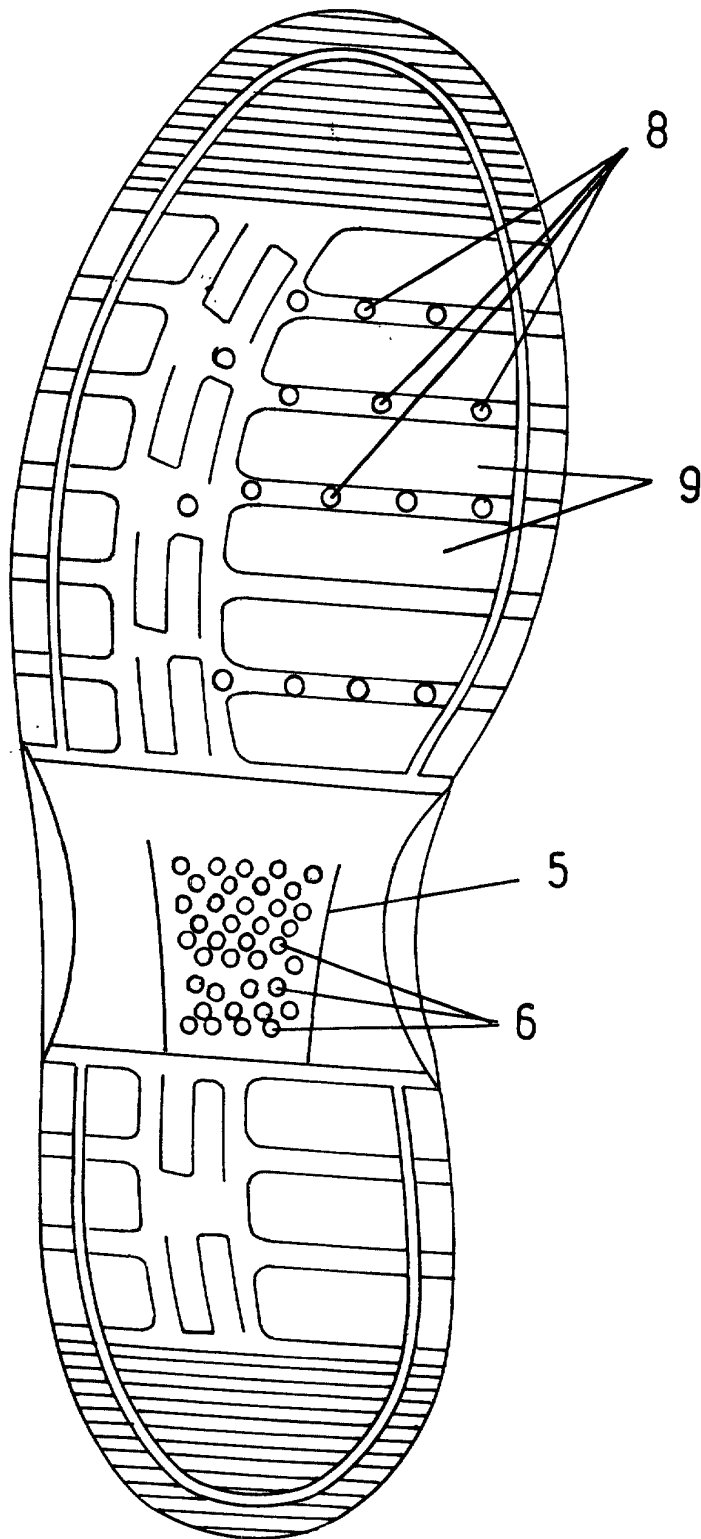


FIG 2





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EUROPEAN SEARCH REPORT

Application Number
EP 01 50 0084

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The present search report has been drawn up for all claims			
Place of search THE HAGUE		Date of completion of the search 18 September 2001	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			

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**ANNEX TO THE EUROPEAN SEARCH REPORT
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EP 01 50 0084

This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report. The members are as contained in the European Patent Office EDP file on
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