

(19)



Europäisches Patentamt

European Patent Office

Office européen des brevets



(11)

EP 0 793 921 A2

(12)

EUROPEAN PATENT APPLICATION

(43) Date of publication:
10.09.1997 Bulletin 1997/37

(51) Int. Cl.⁶: **A43B 5/04**

(21) Application number: **97102822.0**

(22) Date of filing: **20.02.1997**

(84) Designated Contracting States:
AT DE FR IT

(30) Priority: **05.03.1996 IT TV960030**

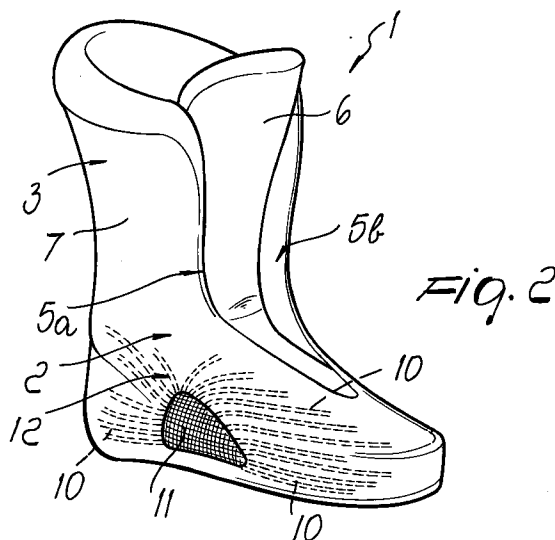
(71) Applicant: **NORDICA S.p.A**
31040 Trevignano (Treviso) (IT)

(72) Inventors:
• **Lucchetta, Faustino**
31100 Treviso (IT)
• **Gigliello, Domenico**
31011 Villa D'Asolo, (Treviso) (IT)

(74) Representative: **Modiano, Guido, Dr.-Ing. et al**
Modiano & Associati S.r.l.
Via Meravigli, 16
20123 Milano (IT)

(54) Innerboot particularly for sports shoes

(57) An innerboot, particularly for sports shoes, including a body (2) wrapping around the user's foot and ankle, and a cuff (3) surrounding the lower part of the leg and composed of an outer lining (7), a padding, and an inner lining, channels (10) being formed in the innerboot at least on one side of the padding, which is made of vapor-permeable flexible foamed plastics, and converging into an opening (11) connected to the outside.



EP 0 793 921 A2

Description

The present invention relates to an innerboot particularly for sports shoes.

Conventional sports shoes, such as motocross boots, are currently usually made of plastics and have devices for the internal ventilation of the foot, so as to ensure an air exchange and allow the foot to perspire.

The solution proposed in Italian patent No. 1,095,699 is aimed particularly at shoes, such as boots, wherein foot sweating is considerable owing to the large surface covered by the shoe.

In this solution, a rigid structure is inserted in the front part of the boot and is accommodated in an adapted seat located approximately at the user's tibia. The rigid structure has a plurality of holes which are connected to the outside and some internal air conveyance flaps, which are directed towards the inside of the shoe and are arranged longitudinally with respect to said shoe.

The holes allow air to enter from outside; the air is guided inside the shoe at a perforated fabric in order to distribute the air on the surface of the leg and of the foot.

However, this solution is not free from drawbacks; since the structure is rigid, its flexing at the tibia during walking is limited. Moreover, since there is a direct contact between the leg and the structure, localized pressure regions can form which cause discomfort to the user during sports practice, considerably reducing shoe comfort during use.

Another drawback is caused by the fact that the rigid structure cannot be extended to the lower lateral part of the shoe, where foot sweating is most intense, because this would make the shoe extremely rigid, limiting the user's movements and further reducing comfort.

As a partial solution to some of these drawbacks, EP-0177892 discloses a ventilation device for sports shoes, particularly for motorcyclists.

The device provides for the overlap of layers of different materials, each having different functions and characteristics.

The device in fact includes: an external upper made of soft material, whereon openings are formed which are partially closed by a mesh to prevent the entry of material from the outside; a grille element with spacers; and a perforated element connected to the inside of the shoe.

The overlapping of layers made of different materials or having different configurations is rather complicated, entailing high costs as regards the manufacture of the shoe; accordingly, this solution, though partially solving the problem of ventilation in the entire shoe, is expensive and not easy to produce.

Another solution is illustrated in US-5,086,572, which discloses a shoe on the upper whereof an air outlet and an air inlet are formed laterally and are connected to the lower part of the upper through lateral channels. The shoe also comprises a perforated insole

allowing to convey the air to a one-way valve which is in turn connected to the outlet.

In this manner, the inner part of the shoe can be ventilated continuously; the movement of the foot placed inside the shoe in fact allows to produce a "pumping effect".

Even this solution, however, entails drawbacks; the use of rigid components, such as the lateral channels connected to the outlet and to the inlet, in fact requires the presence of adapted seats to accommodate the components. Moreover, since the channels are made of rigid material, localized pressure regions form, thus causing discomfort to the user during sports practice, consequently reducing the shoe comfort.

Accordingly, it is necessary to use adapted padding which however cannot be excessive in order not to restrict the user's movements.

Another drawback is due to the considerable production costs required for manufacturing this solution.

A principal aim of the present invention is to solve the described problems, by eliminating the drawbacks of the cited prior art and by providing a structurally simple innerboot ensuring optimum expulsion of moisture and air exchange from the inside of said shoe simply through the natural movement of the foot.

Within the scope of this aim, an important object is to provide an innerboot wherein ventilation can be achieved with low production costs without using rigid components.

Another object is to provide a device which is reliable and safe in use and can be obtained with conventional machines and equipment.

This aim, these objects, and others which will become apparent hereinafter are achieved by an innerboot, particularly for sports shoes, constituted by a body wrapping around the user's foot and ankle, and by a cuff surrounding the lower part of the leg and composed of an outer lining, a padding, and an inner lining, characterized in that one or more channels are formed at least on one side of said padding, which is made of vapor-permeable flexible foamed plastics, and converge into at least one opening connected to the outside.

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:

Fig. 1 is a perspective view of an innerboot for sports shoes, according to the invention;

Fig. 2 is an enlarged perspective partially cut out view of the innerboot of Fig. 1;

Fig. 3 is a sectional view, taken along a median plane lying longitudinally with respect to the innerboot of Fig. 2, wherein the inner lining is partially raised;

Figs. 4 and 5 are cutout views of the elements constituting the innerboot.

With reference to the above figures, the reference numeral 1 designates an innerboot constituted by a body 2 wrapping around the user's foot and ankle. A cuff 3 is associated with the body 2 and surrounds the lower part of the leg.

In the particular embodiment illustrated, the innerboot 1 has a preferably V-shaped opening 4 partially affecting the body 2 in the region above the instep and metatarsal region of the user's foot and internally affecting the cuff 3 in the front region of the tibia.

The opening 4 forms a first flap 5a and a second flap 5b, wherebetween a tongue 6 is preferably interposed.

The innerboot 1 is composed of an outer lining 7 and of an inner lining 8, wherebetween a padding 9 is interposed. The padding is preferably made of vapor-permeable foamed flexible plastics, such as foamed polypropylene.

A plurality of channels 10 is formed on the padding 9 at the side directed towards the foot and/or at the opposite side.

Each channel 10 starts from various points of the innerboot 1 which lie laterally to the body 2 and converges towards at least one opening 11 formed at a region 12 preferably adjacent to the pre-arch region; it has in fact been observed that optimum air expulsion is achieved in this region merely as a consequence of the movement of the foot.

The opening 11 has a desired shape according to requirements and is connected to the outside by means of an adapted perforated mesh, thus allowing ventilation between the inside and the outside of the innerboot 1.

As shown in figure 5, the plurality of channels 10 can be arranged with intersecting main axes, for example at right angles, so as to form a grid which allows to increase the ventilation surface that is in direct contact with the user's foot.

The plurality of channels 10 can be formed for example during the step of producing the padding 9, thus allowing savings in terms of production costs.

It has thus been observed that the invention has achieved the intended aim and objects, a device having been provided that has a simple structure which can be obtained rapidly with low production costs and where-through it is possible to achieve optimum foot ventilation.

The plurality of channels 10 formed on the padding 9 and the presence of the opening 11 allow to expel moisture and to interchange air between the inside and the outside of the innerboot through the natural movement of the user's foot.

This solution does not entail the addition of any rigid element to form the channels; the provision of the channels on the padding in fact ensures an optimum comfort level.

Moreover, the described solution can be applied to any kind of innerboot, in addition to the illustrated one, such as for example innerboots with overlapping flaps, rear-entry innerboots, etcetera.

The materials and the dimensions of the innerboot may vary according to 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 interpretation of each element identified by way of example by such reference signs.

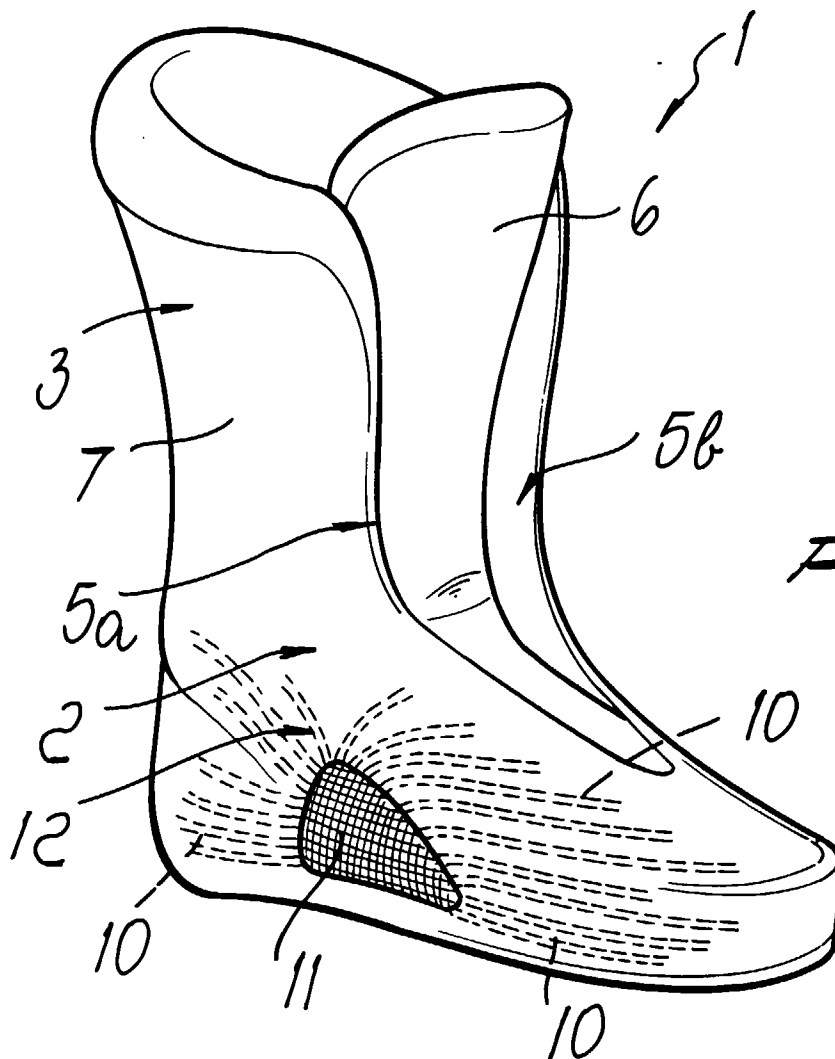
Claims

1. An innerboot, particularly for sports shoes, constituted by a body (2) wrapping around the user's foot and ankle, and by a cuff (3) surrounding the lower part of the leg and composed of an outer lining (7), a padding (9), and an inner lining (8), characterized in that channels (10) are formed at least on one side of said padding, which is made of vapor-permeable flexible foamed plastics, said channels converging into at least one opening (11) connected to the outside.
2. An innerboot according to claim 1, characterized in that said channels (10) are formed on said padding (9) at the side directed towards the foot and/or at the opposite side, each one of said channels starting from various points arranged laterally to said body (2) of said innerboot (1).
3. An innerboot according to claim 2, characterized in that said channels (10) converge towards said opening (11) formed at a region (12) which is adjacent to the pre-arch region.
4. An innerboot according to one or more of the preceding claims, characterized in that said at least one opening (11) is connected to the outside through an adapted perforated mesh.
5. An innerboot according to one or more of the preceding claims, characterized in that said channels (10) are interconnected.
6. An innerboot according to one or more of the preceding claims, characterized in that said channels (10) are arranged along main axes at least partially intersecting so as to form a grid adapted to increase the ventilation surface facing the foot.
7. An innerboot according to one or more of the preceding claims, characterized in that said vapor-permeable flexible foamed plastics is foamed polypropylene.

Fig. 1



Fig. 2



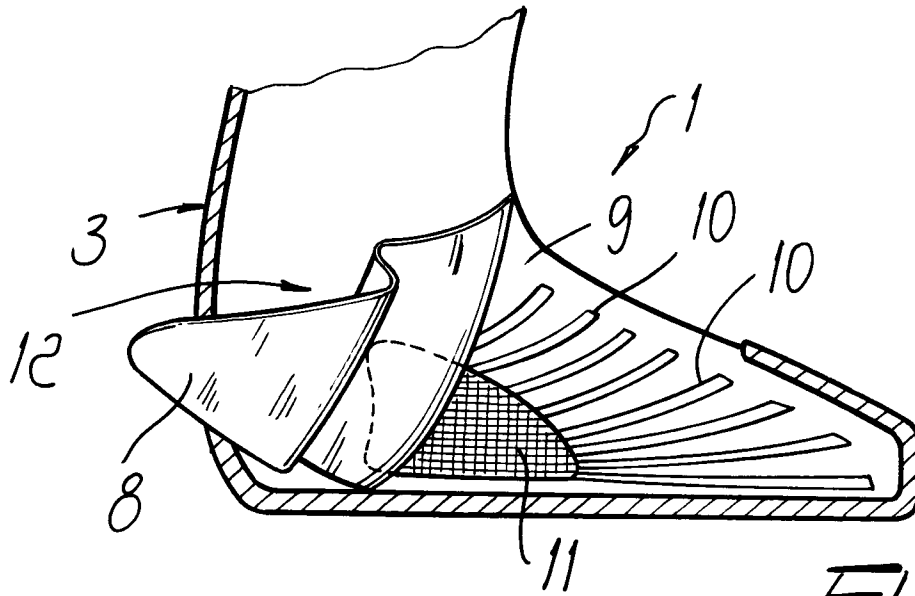


Fig. 3

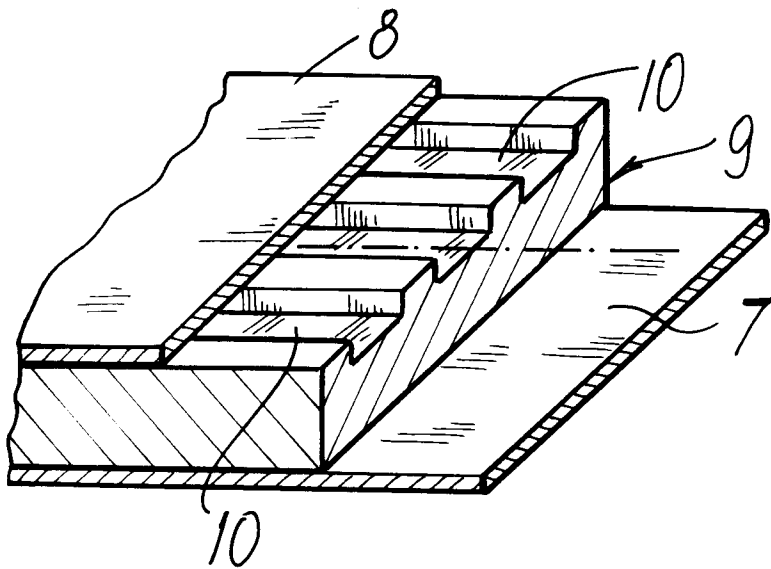


Fig. 4

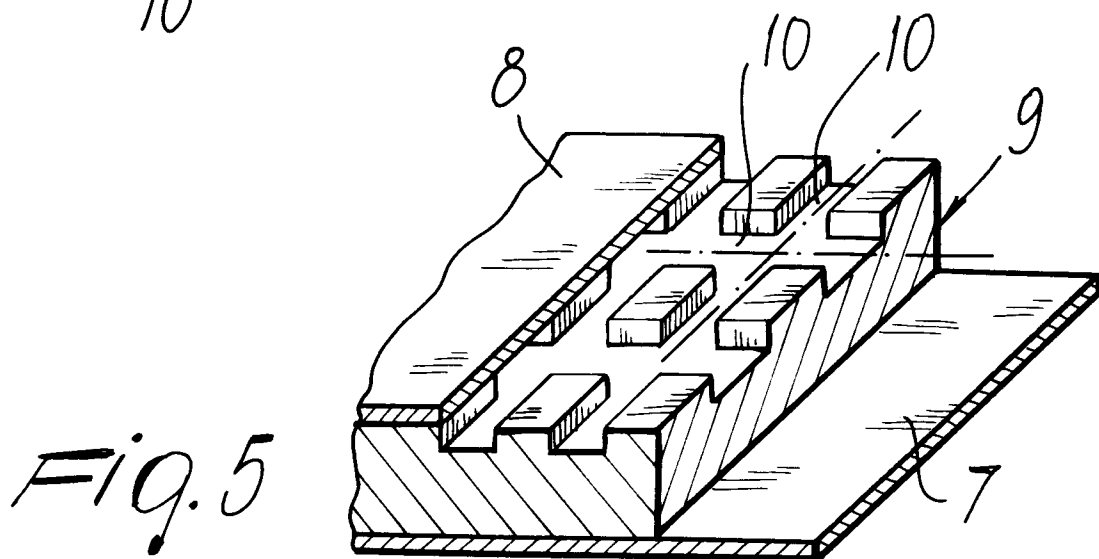


Fig. 5