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Europäisches Patentamt  
European Patent Office  
Office européen des brevets



(11) Publication number:

**0 674 856 A1**

(12)

**EUROPEAN PATENT APPLICATION**(21) Application number: **95104071.6**(51) Int. Cl.<sup>6</sup>: **A43B 5/04**(22) Date of filing: **20.03.95**

(30) Priority: **30.03.94 IT TV940037**  
**23.01.95 IT TV950004**

(43) Date of publication of application:  
**04.10.95 Bulletin 95/40**

(84) Designated Contracting States:  
**AT CH DE ES FR IT LI**

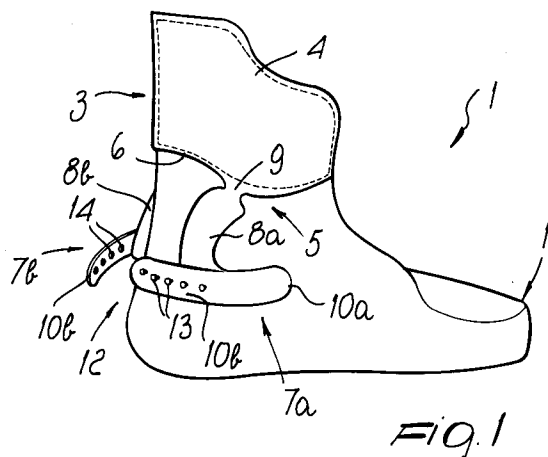
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(54) **Form-fitting adapter, particularly for sports shoes.**

(57) A form-fitting adapter for sports shoes which includes a soft innerboot (1), and is slidably associated with a shell or with a reinforcement element and includes two L-shaped or T-shaped tabs (7a, 7b) that at least partially affect the ankle region. Studs (13) engage seats (14) for selectively positioning the tabs with respect to the innerboot.

**EP 0 674 856 A1**

The present invention relates to a form-fitting adapter for sports shoes, particularly of the type which comprises a soft innerboot.

Currently, sports shoes such as for example ski boots or roller skates or ice skates, substantially comprise a shell and at least one quarter which are rigid, as they are produced by injection-molding thermoplastic material; a soft innerboot, adapted to improve the user comfort, is placed inside the shoes.

Conventional innerboots to be applied inside sports shoes are usually stitched and fitted on a last by means of an assembly operation that entails, in sequence: stitching of an insole; inserting the last; spreading an adhesive; reactivating said adhesive by heating; gluing an inner sole by pressing, and then removing from the last.

It is also known to manufacture innerboots which have a strobil stitch along the edge of the sole in order to fix the upper.

Finally, innerboots are known which have a stiffening collar at their upper edge. The collar usually protrudes beyond the upper edge of the quarter which is associated with the shell.

All these conventional innerboots have drawbacks which are essentially due to the fact that they must adapt to all the different anatomical shapes of the foot, whereas some situations require particular precise adaptation due to a specific anatomical shape, particularly as regards the malleolar regions or generally the ankle region.

US Patent No. 4,019,266 discloses a ski boot, on the innerboot whereof there is, at the malleolar region, a seat for an insert which has a desired resiliency or a desired shape, in order to increase comfort in said region.

However, even this solution has drawbacks, as it is necessary to have several inserts of different shapes, or materials, or resilience, which must be pre-selected and applied according to the specific anatomical configurations of the user. Furthermore, said inserts can be easily lost if the innerboot is removed or when the foot is removed from the shell or when the inserts are applied to the innerboot.

Innerboots are also known with which it is possible to associate an insert at an adapted pocket formed on the outer lateral surface that lies above the malleolar region.

However, even this solution has the drawbacks mentioned above.

The aim of the present invention is to solve the described technical problems, eliminating the drawbacks of the prior art, by providing an innerboot for sports shoes that has a device for adapting, in a form-fitting manner, to the shape of the user's foot.

Within the scope of this aim, an important object is to provide a device that allows to achieve the desired form-fitting adaptation even if the innerboot is removed or handled.

5 Another important object is to provide an adapter that allows to vary and memorize the set degree of form-fitting adaptation.

10 Another important object is to provide an adapter in which the degree of adaptation can be viewed by the user.

Another object is to provide a form-fitting adapter whose components cannot be lost by the user before or after the operations required to achieve adaptation.

15 Another object is to provide an adapter that is structurally simple and has low manufacturing costs.

20 This aim, these objects, and others which will become apparent hereinafter are achieved by a form-fitting adapter for sports shoes comprising a shell and an innerboot, characterized in that said adapter is rotatably associated with said innerboot or with said shell and comprises at least two tabs that at least partially affect the ankle region, said tabs being substantially L-shaped or T-shaped and interacting with means for selectively and stably positioning said tabs with respect to said innerboot.

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

30 figure 1 is a lateral perspective view of an innerboot, according to the invention, wherein the two tabs have not yet been selectively mutually associated;

35 figure 2 is a view, similar to the preceding one, of the obtainment of a desired form-fitting adaptation condition;

40 figure 3 is a view, similar to the preceding one, of a different possibility for achieving form-fitting;

figure 4 is a perspective rear view of a sports shoe with which the device is associated;

45 figure 5 is a perspective rear view of another embodiment;

figure 6 is a side perspective view of an adapter according to a further aspect of the invention;

figure 7 is a rear view of the adapter of figure 6.

50 With reference to the figures, the reference numeral 1 designates an innerboot for sports shoes 2, such as for example ski boots or ice skates or roller skates.

55 Said innerboot 1 is made of soft material and a stiffening collar 4 is advantageously associated therewith, for example by stitching at the upper region 3 that surrounds the tibia of the user.

At least two tabs, designated by the reference numerals 7a and 7b, are associated with or protrude below the lower edge 6 at the lateral regions 5 of the collar 4 which lie above the malleolar region or the ankle region in general.

In the embodiment shown in the drawings, each tab is substantially T-shaped; as an alternative, each tab can be L-shaped.

Each tab thus has a stem 8a, 8b which is connected, at its free end, to the lower edge 6 of the collar 4 by means of a portion 9 which is thinner or narrower, so as to form a hinge-like coupling that allows each tab to rotate about said portion 9 on a plane which is approximately parallel to the plane of the outer lateral surface of the innerboot.

As an alternative, the two tabs 7a and 7b can be rotatably connected, at the respective stems 8a and 8b, directly to the innerboot 1, for example by means of a short series of stitches or by means of a pivot or a rivet.

Each tab 7a and 7b therefore has a head whose flaps 10a and 10b are directed respectively towards the tip 11 of the innerboot 1 and surround the rear region 12 of said innerboot in the region above the heel.

The tips of the flaps 10b of each tab can partially or totally mutually overlap at the region that lies above the user's heel, and have means for selectively positioning them with respect to said innerboot. Said means are constituted for example by a plurality of mushroom-shaped studs 13 which protrude longitudinally with respect to one of said flaps 10b and interact with complementarily shaped seats 14 formed on the other wing 10b of the other tab.

In this manner, as shown in the accompanying drawings, it is possible to achieve a temporary mutual coupling of the tabs: the more the flaps 10b are overlapped, the further the tabs 7a and 7b rotate, making the flaps 10a move towards each other away from the collar 4.

In this manner, the pair of tabs is arranged so as to adapt to the anatomical shape of the ankle, increasing the fit of the innerboot.

It has thus been observed that the invention has achieved the intended aim and objects, an adapter having been obtained that allows to adapt the innerboot to the particular shape of the user's foot quickly and easily.

As shown in figure 4, it is in fact possible to make the flaps 10b of the tabs 7a and 7b protrude outside the shell 15 of the sports shoe through appropriately provided slots 16, so that said tabs can be gripped more quickly and easily by the user without having to remove the innerboot.

Furthermore, optimum form-fitting adaptation can be quickly restored even after removing or

handling the innerboot, as it is possible to memorize the point where the two flaps 10b join because said point is visible.

The adapter is of course susceptible of numerous modifications and variations, all of which are within the scope of the same inventive concept.

Thus, for example, the flaps or the two tabs can be padded or filled with flow-fit material constituted by plastics or air or other substances that adapt, optionally with memory, to a particular shape.

The means for selectively positioning the two tabs with respect to the innerboot can also be constituted by a portion of tear-open tape, for example of the type known by the trade-name "Velcro", or equivalent means, placed on each one of the flaps 10b.

If instead the tabs are L-shaped and the flaps 10b are therefore not provided, said means, provided as mentioned, are arranged respectively on the innerboot 1 and on the tabs 7a and 7b.

Figure 5 illustrates a shell 115 of a sports shoe which has, in a rear region, a tongue 117 which protrudes above the heel region.

A cross-member 119 is associated, either internally or externally and by virtue of conventional means, proximate to the upper edge 118 of the tongue 117.

Said cross-member is U-shaped and has ends 120a and 120b with which L-shaped tabs 107a and 107b are associated.

In particular, the ends 120a and 120b are monolithic or are associated in a rearward position with the stems 108a and 108b of the tabs 107a and 107b; the flaps 110 of said tabs are directed toward the tip 111 of the shell 115.

A strap 121a and 121b is associated longitudinally with respect to each flap 110 and preferably on the outside of said flaps; said strap protrudes outside the shell 115 through adapted slots 116 formed thereon.

As an alternative, the straps can be monolithic with the flaps 110, which accordingly would become T-shaped.

Finally, means are provided for selectively and stably positioning the tabs inside the shell; said means are constituted by a plurality of mushroom-like studs 113 which protrude from a strap and can be selectively positioned in adapted seats formed on the other strap.

With reference to figures 6 and 7, the form-fitting adapter is associable with an innerboot 201 particularly for sports shoes such as ski boots or roller skates or ice skates, not shown in the figure.

Said innerboot 201 is made of soft material and a reinforcement element 202 or a shell is advantageously associated therewith.

The form-fitting adapter is interposed between the reinforcement element 202 and the innerboot 201 in the region that is adjacent to the user's heel and lies above it, and is symmetrical with respect to a median plane that lies longitudinally with respect to the innerboot 201.

Said form-fitting adapter comprises two tabs 203a and 203b which are substantially L-shaped in the illustrated embodiment; but alternatively, they can be T-shaped or C-shaped.

The tabs 203a and 203b comprise a first upper flap, designated by the reference numerals 204a and 204b, which extends parallel to the tibia of the user in a region that lies to the rear of the malleolus, and by a second lower flap 205a and 205b which is directed towards the tip 206 of the innerboot 201.

Each tab 203a and 203b surrounds the malleolus of the user laterally and in a lower region during use.

Said tabs 203a and 203b are mutually connected by a bridge 207 at the first upper flaps 204a and 204b.

The adapter comprises means for positioning it selectively with respect to the ankle; said means comprises a rigid spoiler 208 which protrudes at one end beyond the upper edge 209 of the reinforcement element 202.

Said spoiler has a stem 210 which is connected to the transverse bridge 207 at its free end.

The supporting element 202 has, in a central position, in the part that lies above the user's heel, a longitudinal opening 211 which starts from the lower edge 212 of the supporting element 202 and affects part of its height.

The opening 211 is slightly wider than the stem 210.

Two mutually parallel slots 213a and 213b are formed on said reinforcement element 202 laterally to said openings 211.

The assembly of the adapter entails the insertion of the tabs 203a and 203b in the slots 213a and 213b, arranging the bridge 207 outside the supporting element 202 and then passing the stem 210 inside the supporting element 202 through the opening 211.

In this manner, the two tabs are placed inside the supporting element at the ankle of the user; by acting on the spoiler, the user can adjust the entire device, adapting it to his own anatomical shape.

By viewing from outside the position assumed by the bridge 207 it is possible to memorize it and use it during subsequent uses of the sports shoe.

It has thus been observed that the invention has achieved the intended aim and objects, an adapter having been obtained that allows to adapt the innerboot to the particular shape of the user's foot quickly and easily.

Furthermore, optimum form-fitting adaptation can be quickly restored even after removing or handling the innerboot, as it is possible to memorize the position of the two flaps by referring to the portion of the spoiler which is visible to user and protrudes from the upper perimetric edge of the shell or of the reinforcement element.

The means for selectively positioning the two tabs with respect to the innerboot can also comprise adapted protrusions or mushroom-shaped studs that protrude from said spoiler and can be selectively arranged in one of multiple holes or seats which are formed on said shell or reinforcement element along the longitudinal axis of said spoiler.

The materials and the dimensions that constitute the individual components of the adapter may of course 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 interpretation of each element identified by way of example by such reference signs.

## Claims

1. Form-fitting adapter for sports shoes comprising a shell and an innerboot, characterized in that said adapter is rotatably associated with said innerboot (1,101,201) or with said shell and comprises at least two tabs (7a,7b,107a,107b,203a,203b) that at least partially affect the ankle region, said tabs being substantially L-shaped or T-shaped and interacting with means (13,14) for selectively and stably positioning said tabs with respect to said innerboot.
2. Adapter according to claim 1, characterized in that said at least two tabs (7a,7b) are associated at the lateral regions of said innerboot (1) that lie above the malleolar region or the ankle region.
3. Adapter according to claim 1, characterized in that a stiffening collar (4) is associated with said innerboot in an upper region, said tabs being rotatably associated with said stiffening collar.
4. Adapter according to one or more of the preceding claims, characterized in that each of said tabs (7a,7b) is substantially T-shaped and comprises a stem (8a,8b) which is connected, at its loose end, to a lower edge (6) of a collar

- (4) or to said lateral regions of said innerboot by means of a thinner and/or narrower region, so as to form a hinge-like connection that allows each tab to rotate about a portion (9) on a plane which is approximately parallel to the plane of the outer lateral surface of said innerboot.
5. Adapter according to claim 1, characterized in that each of said tabs (7a,7b) has a head whose flaps (10a,10b) are directed respectively towards the tip (11) of said innerboot and surround the rear region (12) of said innerboot in the region above the heel.
  6. Adapter according to claim 5, characterized in that the tips of said flaps (10b) that surround said heel can mutually overlap partially or totally, said flaps having said means (13,14) for selectively and stably positioning them with respect to said innerboot.
  7. Adapter according to claim 6, characterized in that said means comprises mushroom-shaped studs (13) which protrude longitudinally with respect to one of said flaps (10b) that surrounds the rear region (12) of said innerboot, said studs interacting selectively with complementarily shaped seats (14) formed on the other one of said flaps (10a) that is directed towards the tip (11) of said innerboot.
  8. Adapter according to claim 7, characterized in that said means comprises a portion of tear-open tape placed on each one of said flaps.
  9. Adapter according to one or more of the preceding claims, characterized in that said flaps (10a, 10b) that surround the rear region of said innerboot protrude therefrom through adapted slots (16), provided in the shell (15), so that they can be gripped by the user.
  10. Adapter according to one or more of the preceding claims, characterized in that said tabs are padded or filled with flow-fit material constituted by plastics or air or other substances that adapt to a particular shape.
  11. Adapter according to claim 1, characterized in that each of said tabs is permanently connected to said innerboot (1) by means of a stitched portion or by means of a pivot or a rivet.
  12. Adapter according to claim 1, characterized in that said means for selectively and stably positioning said pair of tabs with respect to said innerboot is arranged on each one of said tabs and on said innerboot.
  13. Adapter according to claim 1, characterized in that it is interposed between a reinforcement element (202) and said innerboot (201) in a region that is adjacent to the heel of the user and lies above it, said adapter being symmetrical with respect to a median plane that lies longitudinally with respect to said innerboot.
  14. Adapter according to claim 13, characterized in that said tabs comprise a first upper flap (204a, 204b), which extends parallel to the user's tibia in a region that lies to the rear of the malleolus, and a second lower flap (205a, 205b), which is directed towards the tip (206) of said innerboot (201).
  15. Adapter according to claim 14, characterized in that said tabs (203a, 203b) are mutually connected, at said first upper flaps, by a bridge (207).
  16. Adapter according to claim 15, characterized in that said means for selectively positioning said adapter with respect to the ankle comprises a rigid spoiler (208) which protrudes at one end beyond the upper edge (209) of said reinforcement element (202).
  17. Adapter according to claim 16, characterized in that said spoiler has a stem (210) that is connected, at its loose end, to said bridge (207).
  18. Adapter according to claim 17, characterized in that said supporting element (202) has, in a central position, in the part that lies above the user's heel, a longitudinal opening (211) which runs from the lower edge (212) of said supporting element (202) and affects part of the vertical extension thereof.
  19. Adapter according to claim 18, characterized in that said opening (211) is slightly wider than said stem (210).
  20. Adapter according to claim 19, characterized in that two mutually parallel slots (213a,213b) are formed on said reinforcement element (202) laterally to said openings (211).
  21. Adapter according to claim 20, characterized in that said tabs (203a,203b) are inserted within said slots (213a,213b) and are interposed between said innerboot (201) and said supporting element (202), whereas said stem (210) passes inside said supporting element (202) through

said opening (211).

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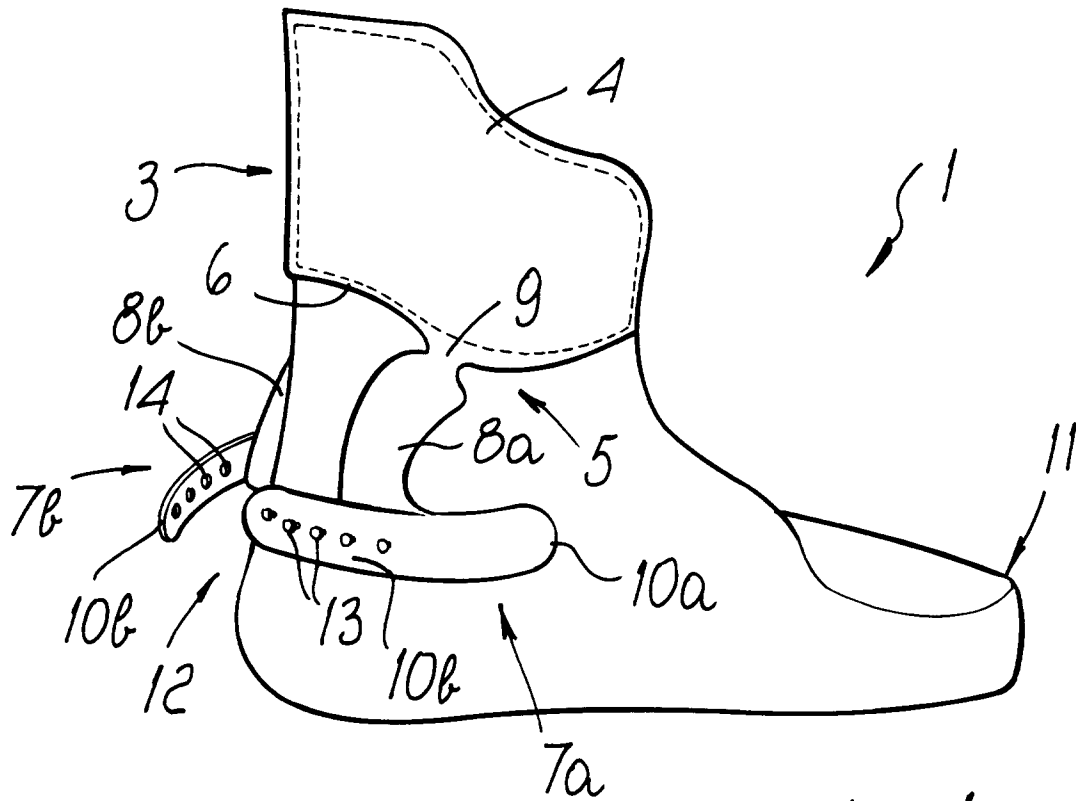


Fig. 1

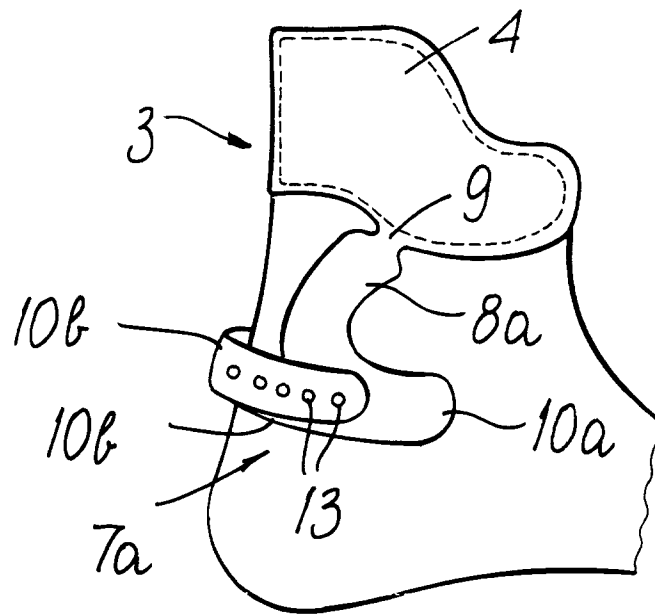


Fig. 2

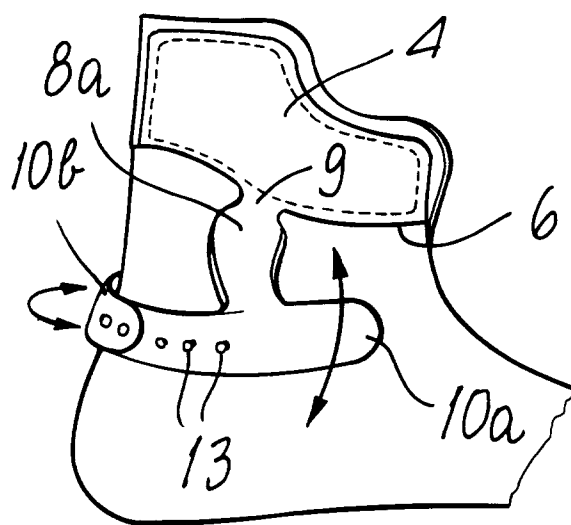


Fig. 3

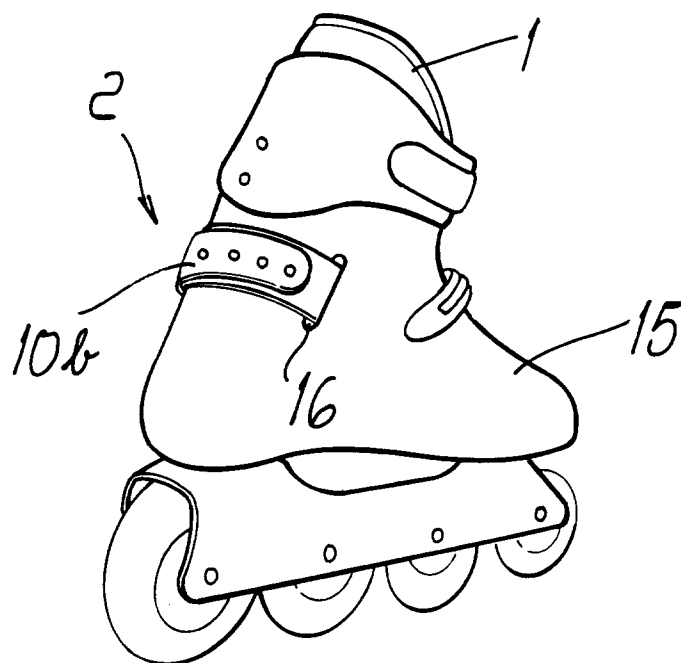


Fig. 4



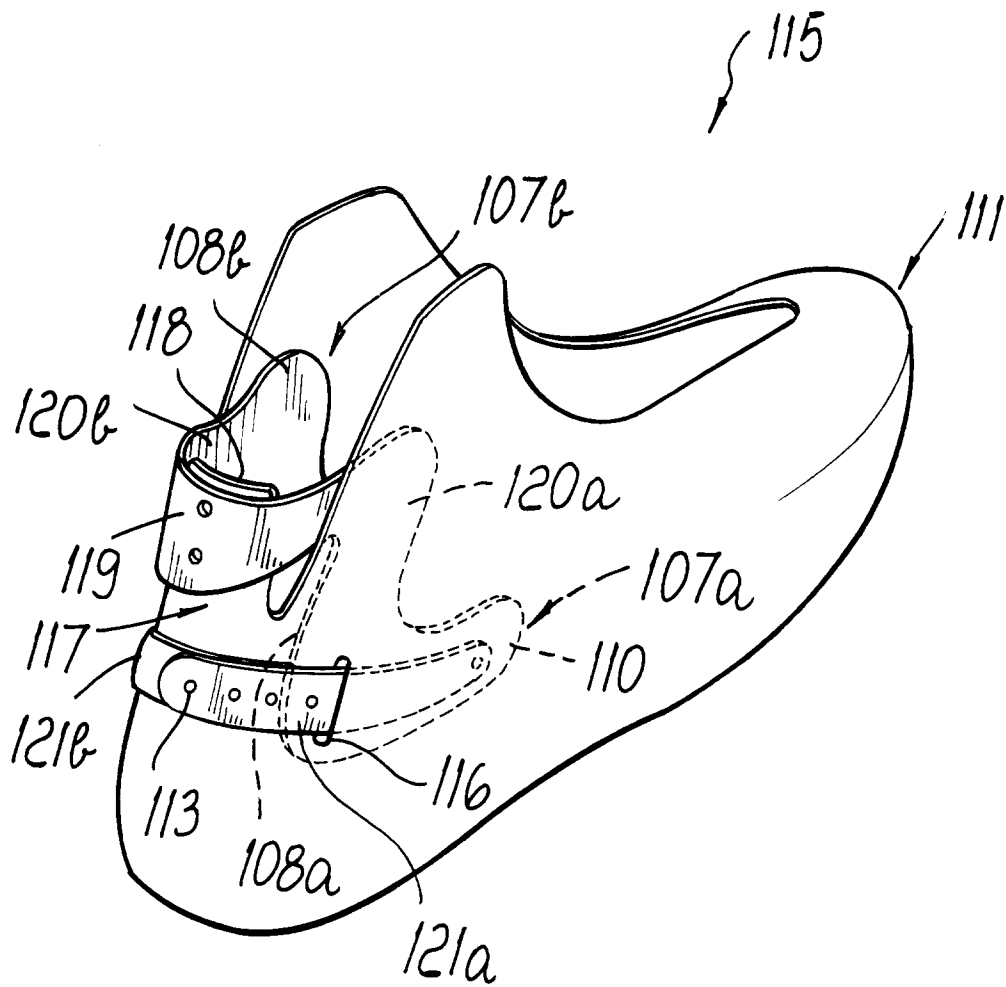


Fig. 5

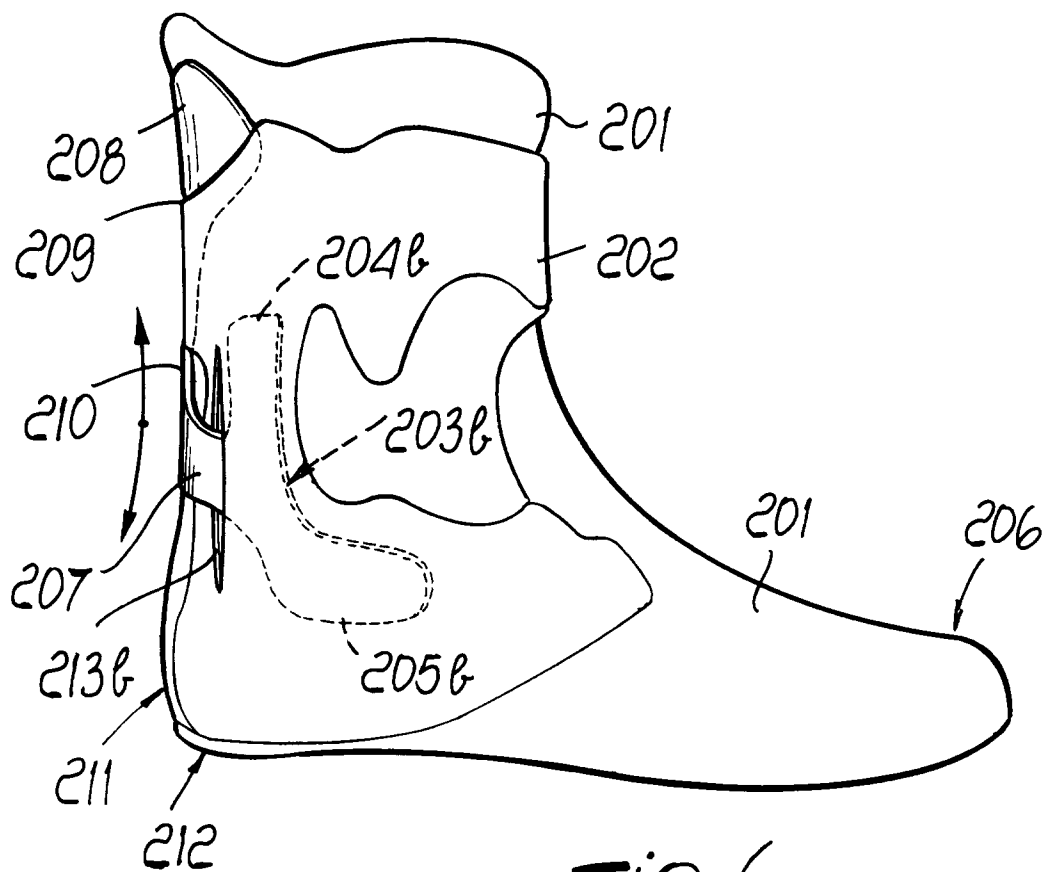


Fig. 6

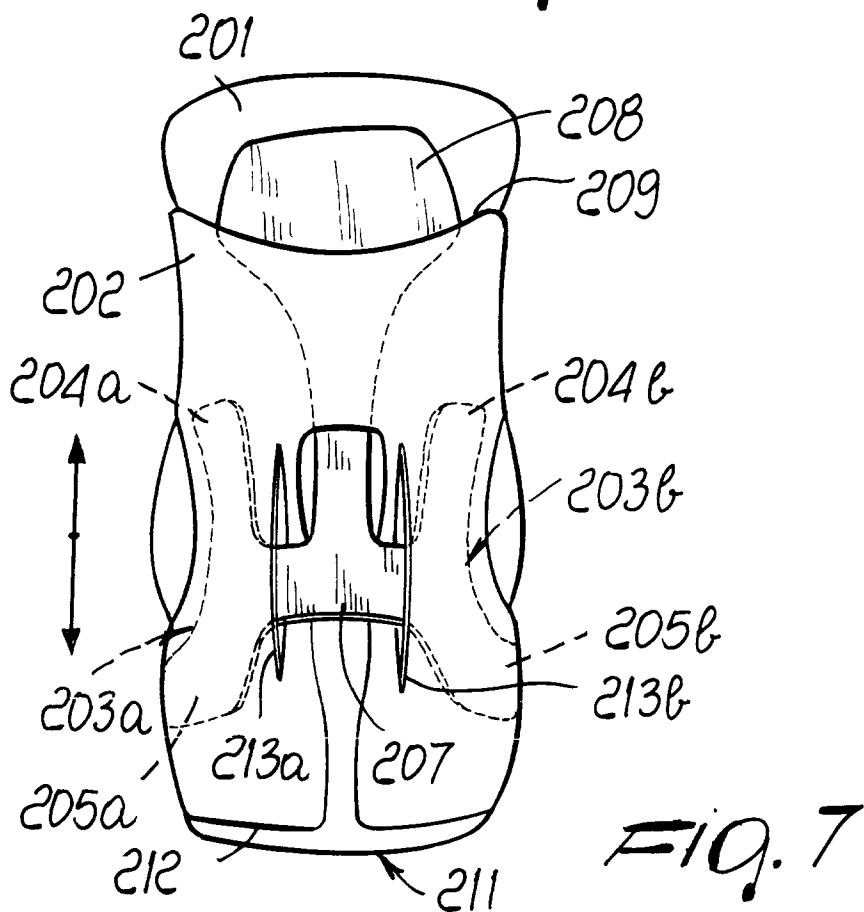


Fig. 7



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## EUROPEAN SEARCH REPORT

Application Number  
EP 95 10 4071

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	DE-U-92 04 747 (MARCOLIN) * page 4, paragraph 3; figures * ---	1,2,11	A43B5/04
A	FR-A-2 542 983 (LEDERER) * page 5, line 37 - page 6, line 19; figures 1-5 * ---	1,10	
A	US-A-3 977 098 (CHALMERS) * column 4, line 14 - line 35; figures * ---	1	
A	US-A-3 599 351 (CHECK) * column 5, line 24 - line 59; figures * -----	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 15 June 1995	Examiner Scholvinck, T
<b>CATEGORY OF CITED DOCUMENTS</b> 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			