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(12) # EUROPEAN PATENT APPLICATION

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(54) **Ankle protection accessory, particularly for sports use.**

(57) Ankle protection accessory, particularly for sports use, comprising at least one component (10) made of elastic material, having a coverage area affecting at least the malleolar regions, and joined to at least one protection element (17) of the rigid shield type.

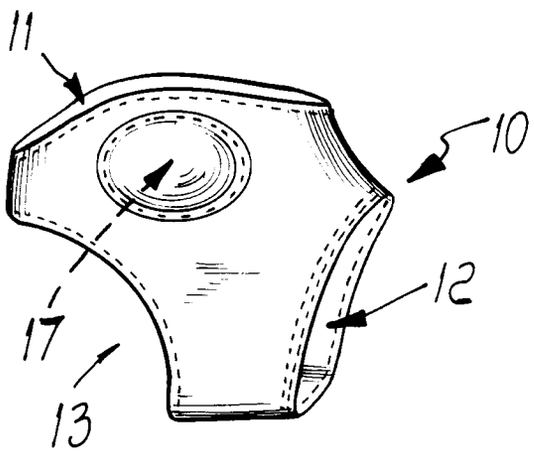

Fig.1

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The present invention relates to an ankle protection accessory particularly but not exclusively useful in sports activities that entail the risk of bruises or generally of injuries to the ankle.

It is known that in many sports, such as for example soccer, the ankle is exposed to various kinds of injuries and traumas.

This exposure of the ankle is due to the fact that the shoes typically used are designed to leave the widest range and greatest possible ease of movement and articulation during play thus dealing inadequately, if at all, with the protection of the articulation of the ankle, which is exposed, for example in the case of soccer, to traumas due to the kicks of the opponents during action and to sprain-inducing stresses and/or intense compression while running.

Accordingly, the shoes generally used in sports activities offer substantially no coverage of the ankle and absolutely no specific protection of the malleoli and of other parts of the ankle (for example, the tendon region, the submalleolar region, and others).

A principal aim of the present invention is therefore to provide an accessory to be worn under, or be associated with, sports shoes whose structure leaves the ankle exposed, said accessory protecting said ankle against the various kinds of injury and trauma.

An object of the invention is to provide an element for containing the articular movement of the ankle, both for individuals engaged in rehabilitation and for individuals who practice sports during which particularly intense ankle stresses occur.

Another object of the present invention is to provide a product that is very easy and comfortable to use.

Another object of the invention is to provide a product having a very low cost.

Another object of the invention is to provide an object that can be easily mass-produced.

This aim, these objects, and others are achieved by an ankle protection accessory, particularly for sports use, characterized in that it comprises at least one component made of elastic material, having a coverage area that affects at least the malleolar regions, and joined to at least one protective element of the rigid shield type.

Further characteristics and advantages of the invention will become apparent from the following detailed description of two embodiments thereof, illustrated only by way of non-limitative example in the accompanying drawings, wherein:

figure 1 is a perspective view of the accessory according to the invention, in a first embodiment, in which it forms an elastic sock;

figure 2 is a cutout view of the protections;

figure 3 is a perspective view of a first different embodiment of the elastic sock according to the invention;

figure 4 is a perspective view, illustrating how the elastic sock related to the different embodiment of figure 3 according to the invention is worn under sports shoes;

figure 5 is a side view of the elastic sock according to the invention, related to the different embodiment shown in figure 3;

figure 6 is a transverse sectional view, illustrating the functional couplings between the sports shoe, the elastic sock according to the invention, and the foot/ankle;

figure 7 is a side view of another embodiment of the elastic sock according to the invention;

figure 8 is a side view of the embodiment shown in figure 7 of the elastic sock according to the invention;

figure 9 is a side view of yet another embodiment of the elastic sock according to the invention;

figure 10 is a side view of the embodiment shown in figure 9 of the elastic sock according to the invention;

figure 11 is a side view of a further embodiment of the elastic sock according to the invention;

figure 12 is a side view of the embodiment shown in figure 11 of the elastic sock according to the invention;

figure 13 is a side view of yet another embodiment of the elastic sock according to the invention;

figure 14 is a side view of the embodiment shown in figure 13 of the elastic sock according to the invention;

figure 15 is a side view of an accessory according to the invention, in a second embodiment thereof, in which it forms a band that is monolithically associated with a corresponding shoe;

figure 16 is a sectional view of a detail related to the protections of the band of figure 15.

With reference to figure 1, an accessory for protecting the articulation, in a first embodiment in which it forms an elastic sock, is generally designated by the reference numeral 10.

The elastic sock 10 comprises a component, designated by the same reference numeral, made of significantly thick double-stretch fabric or material, such as neoprene or other equivalent material; said component has an opening 11 for inserting the foot therein, an opening 12 for the passage of the metatarsal region, and an opening 13 for the passage of the heel.

A mesh 15 made of a light elastic material or of another equivalent element such as elastic fabric is joined at each malleolus inside the elastic sock 10 by means of double stitches; said mesh accord-

ingly forms a pouch 16 containing a protective element 17 comprising a substantially elliptical shield 18 adapted to cover the malleolus, is made of a rigid material, and is associated with a rear layer 19 of beads, preferably made of foamed polystyrene 20 or of another material.

With reference to figures 3, 4, 5, and 6, a first different embodiment of the elastic sock accessory for protecting the articulation of the ankle according to the invention is generally designated by the reference numeral 100.

Said elastic sock 100 comprises an elastic component 101 which is joined, by means of stitches or another equivalent system (not shown in the figures), to an insole 102 made of soft plastics.

The elastic component 101 has a region 103, affecting the articulation of the ankle and constituted by a significantly thick double-stretch fabric or material, such as neoprene or other equivalent material, and two regions 104 and 105, respectively affecting the front part of the foot and the heel and constituted by a mesh of light elastic material.

The regions 103, 104, and 105 are mutually joined by means of stitches 106a arranged on reinforcement strips 106; the region 103 furthermore has a foot insertion opening 107 to which a border 108, made of soft fabric or material, is stitched.

Two meshes 114 or equivalent elements (made of the same elastic material as the regions 104 and 105) are internally joined to the region 103 at the malleoli by means of double stitches 109; in this manner, said meshes form two pouches 114a containing respective protective elements 110; each protective element comprises a substantially elliptical shield that is adapted to cover the malleolus, is made of rigid material, and is associated with a rear layer 112 of beads made of foamed polystyrene or other material.

With reference to figures 7 and 8, another embodiment of the elastic sock according to the invention, generally designated by the reference numeral 200, again has an elastic component 201 joined to an insole 202, and regions 203, 204, and 205 made of a different fabric or elastic material and related to the elastic component 201.

As before, there are two protective elements 210 joined to the region 203, and a band 216 made of non-elastic synthetic fabric or material wraps around the ankle and has an end 217 that is joined to the elastic component 201 by means of stitches or equivalent means (not shown in the figure) and has, on the end 218, anchoring means made of Velcro(TM) or other equivalent materials.

With reference to figures 9 and 10, a further embodiment of an elastic sock according to the invention, generally designated by the reference numeral 300, has, in addition to an elastic component 301 joined to the insole 302 and in addition to the regions 303, 304, and 305, made of a different fabric or elastic material and related to the elastic component 301, two protective elements 310, which are joined to the region 303, and an elastic tubular band 316, made of elastic material or fabric and joined to the upper part of the elastic component 301 by stitches or equivalent means (not shown in the figures).

Said elastic tubular band 316 has a padded accordion-like portion 317 in the tendon region directly above the heel.

A strap 318 made of non-elastic synthetic material is also joined to said elastic tubular band 316 by stitching or other equivalent means (not shown in the figure); said strap 318 has an end 319 that is joined by means of stitches or equivalent means (not shown in the figures) to the tubular band 316 and furthermore has, at the free end 320, an anchoring system provided with Velcro or other equivalent means.

With reference to figures 11 and 12, a further embodiment of the elastic sock according to the invention, generally designated by the reference numeral 400, has, in addition to an elastic component 401 joined to the insole 402, and in addition to the regions 403, 404, and 405 made of a different elastic material or fabric and related to the elastic component 401, two protective elements 410 joined to the region 403, and a band 416 made of synthetic fabric or material that wraps around the ankle from a lateral region to a median region; said band 416 has an end 417 joined to the elastic component 401 by stitching or equivalent means and has, on the end 418, anchoring means made of Velcro or other equivalent materials.

Said elastic sock 400 furthermore has a cuff 419 made of padded elastic material or fabric, which is joined to the upper part of the elastic component 401 by stitches or equivalent means (not shown in the figure); said cuff 419 has an equally padded accordion-like portion 420 in the tendon region, directly above the heel.

A strap 421 made of non-elastic synthetic material is joined to said cuff 419 by means of stitches or other equivalent means (not shown in the figure).

The strap 421 has an end 422 that is joined by stitching or equivalent means (not shown in the figure) to the cuff 419, and has, at its free end 423, an anchoring system made of Velcro or of another equivalent means.

With reference to figures 13 and 14, another embodiment of an elastic sock according to the invention, generally designated by the reference numeral 500, has, in addition to an elastic component 501 joined to the insole 502, and in addition to the regions 503, 504, and 505 made of a different

elastic material or fabric that are related to the elastic component 501, two protective elements 510 joined to the region 503 and two Y-shaped reinforcements 516 padded with soft material, which are arranged in the submalleolar regions and are joined to the elastic component 501 by stitching or equivalent means (not shown in the figure).

With particular reference to figures 15 and 16, an accessory according to the invention, in an embodiment in which it forms a band, is generally designated by the reference numeral 600.

The band 600, which surrounds the ankle at the level of the malleoli, is monolithically associated with a corresponding shoe 601, in this case by means of stitches not shown in the figures.

The band 600 is furthermore made of double-stretch material of significant thickness, such as neoprene, and two protection shields 602 made of rigid material are associated with said band to the rear so as to cover the malleoli (only one shield, related to the outer malleolus, is shown in the figures).

The coupling of each shield 602 to the band 600 is ensured by a corresponding element 603, also made of double-stretch material, such as neoprene, that is stitched to said band at its edge 604, with which it forms a closed pouch 605 containing the corresponding shield 602.

In practice it has been observed that the intended aim and objects of the present invention have been achieved.

In particular, it is stressed that the association of an elastic sock or elastic band and of a rigid protection excellently solves the problem of ankle protection without compromising in any way the freedom of motion of said ankle.

The invention thus conceived is susceptible of numerous modifications and variations, all of which are within the scope of the inventive concept; for example, the polystyrene beads can be replaced with gel or other equivalent material.

In particular cases it is possible to provide only an insole that is associated, in the ankle articulation region, by means of a protective half-sock made of double-stretch material or fabric, with the shield-like protective elements provided with elastic cushioning means at the malleoli.

All the details may furthermore be replaced with other technically equivalent elements.

In practice, the materials employed, so long as they are compatible with the contingent use, as well as the dimensions, may be any according to the 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. Ankle protection accessory, particularly for sports use, characterized in that it comprises at least one component (10,100,201,301,401,501) made of elastic material, having a coverage area that affects at least the malleolar regions, and joined to at least one protective element (17,110,210,310,410,510,602) of the rigid shield type.

2. Accessory according to claim 1, characterized in that it comprises rear cushioning means (19) for elastically absorbing stresses cooperating with said rigid-shield protective element (310,410).

3. Accessory according to claim 1, characterized in that it forms an elastic sock, said elastic component (10,100,201,301) being joined to an insole (102,202,302) made of soft plastics, said at least one rigid-shield protective element (17,110,210,310,410,510,602) being furthermore joined to said elastic component.

4. Accessory according to claim 3, characterized in that said elastic component comprises at least two different kinds of fabric, respectively for the articular region of the ankle and for the metatarsal and heel regions, a foot access opening (11,107) being formed in said elastic component.

5. Accessory according to claim 3, characterized in that said elastic component comprises, as regards the articular region of the ankle, a fabric made of significantly thick double-stretch material such as neoprene or other equivalent material, cut so as to fully wrap around the articular region of the ankle, covering at least the malleoli and allowing foot access.

6. Accessory according to claim 3, characterized in that said elastic component (10) comprises, as regards the metatarsal and heel regions, a mesh (104,105) of elastic material cut so as to follow said regions.

7. Accessory according to claim 3, characterized in that said double-stretch fabric and said elastic fabric are mutually joined by stitches (106a) or other equivalent means, reinforcement bands (106) or other equivalent means being

optionally provided.

8. Accessory according to claim 3, characterized in that said elastic component is joined to the insole (102) by stitches or equivalent means.

9. Accessory according to one or more of the preceding claims, characterized in that said rigid shield (110,210,310) has a substantially elliptical shape.

10. Accessory according to claim 2, characterized in that said elastic cushioning means (19) comprises beads made of foamed polystyrene or gel or equivalent material.

11. Accessory according to claim 2, characterized in that said protective element and said cushioning means (19) are contained in a pouch (114a) formed by a fabric element joined to said elastic component by stitches or equivalent means.

12. Accessory according to one or more of the preceding claims, characterized in that it has devices (216,318) for opening and closing the foot access regions.

13. Accessory according to claim 12, characterized in that said closure and opening devices comprise bands (216,318) made of tear-resistant material having, at their free end, an anchoring means (218,320) made of Velcro or equivalent systems, their other end (319) being joined to said elastic component by means of stitches or equivalent systems.

14. Accessory according to one or more of the preceding claims, characterized in that it has at least one band (216) for containing articular motion.

15. Accessory according to claim 14, characterized in that said band (216) crosses the foot instep and has, at its free end, an anchoring means (218) made of Velcro or equivalent systems, the other end (217) being joined to said elastic component by means of stitches or equivalent systems.

16. Accessory according to one or more of the preceding claims, characterized in that a cuff (419) is provided in an upward region and is joined to said elastic component.

17. Accessory according to claim 16, characterized in that said cuff is padded with a soft material.

18. Accessory according to claims 16 and 17, characterized in that said cuff has at least one closing and opening strap (421).

19. Accessory according to claim 16, characterized in that said cuff (419) has a padded accordion-like portion (420) affecting the rear tendon region above the heel.

20. Accessory according to one or more of the preceding claims, characterized in that said elastic component has at least one Y-shaped protection (516) in the submalleolar region.

21. Accessory according to claim 20, characterized in that said Y-shaped protection (516) is joined to said elastic component by means of stitches or equivalent systems, the Y-shaped protection being furthermore padded with soft material.

22. Accessory according to claim 1, characterized in that it forms a band (600) surrounding the ankle at the malleolar level and monolithically associated, by stitches or another equivalent coupling means, with a corresponding sports shoe.

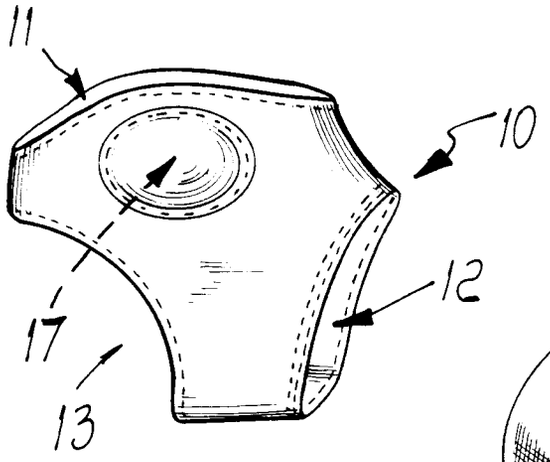

FIG. 1

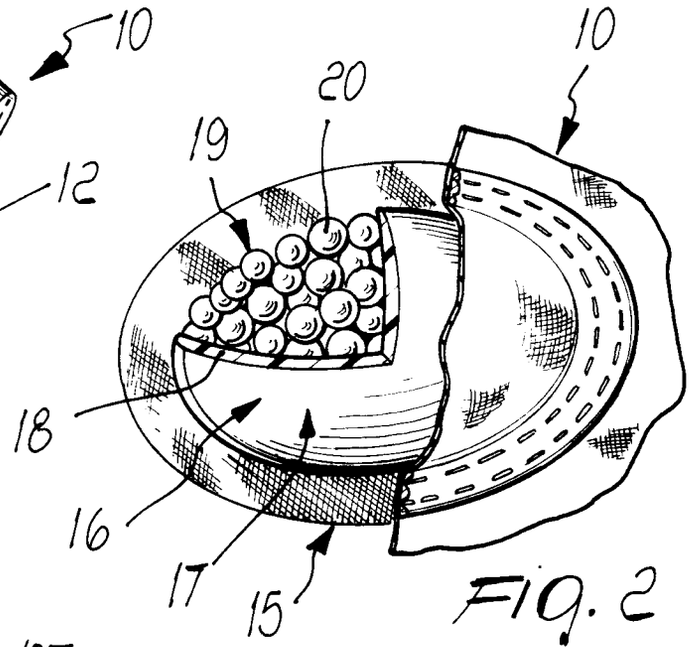

FIG. 2

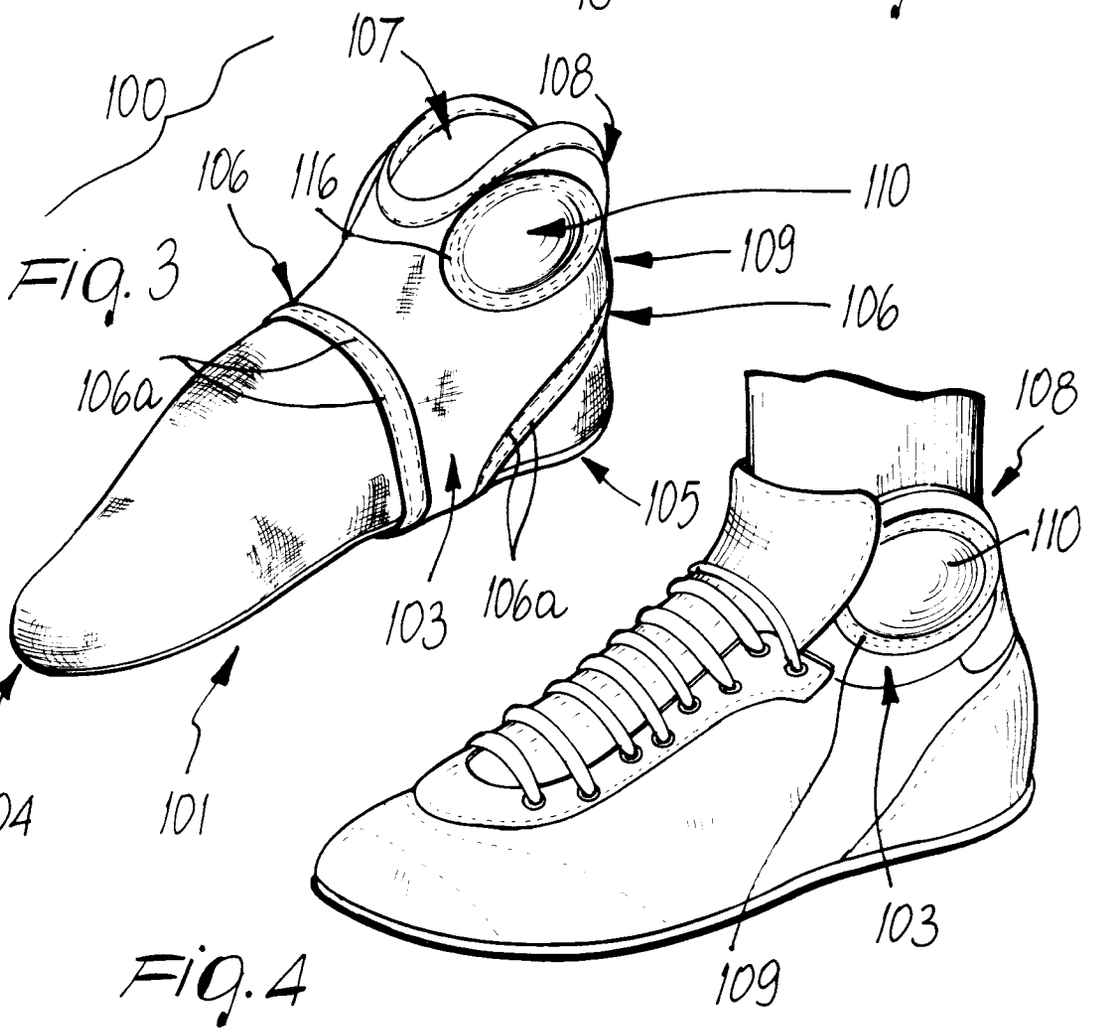

FIG. 3

FIG. 4

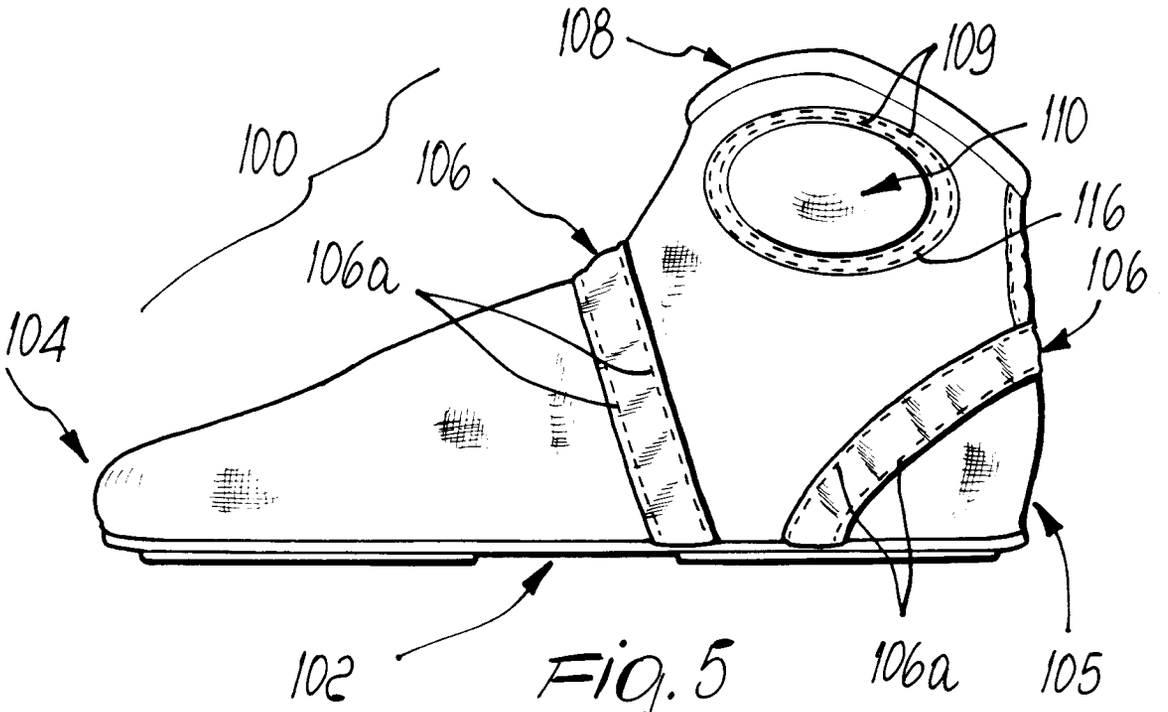
108
109
110
100
106
116
106a
106
104
102
106a
105

Fig. 5

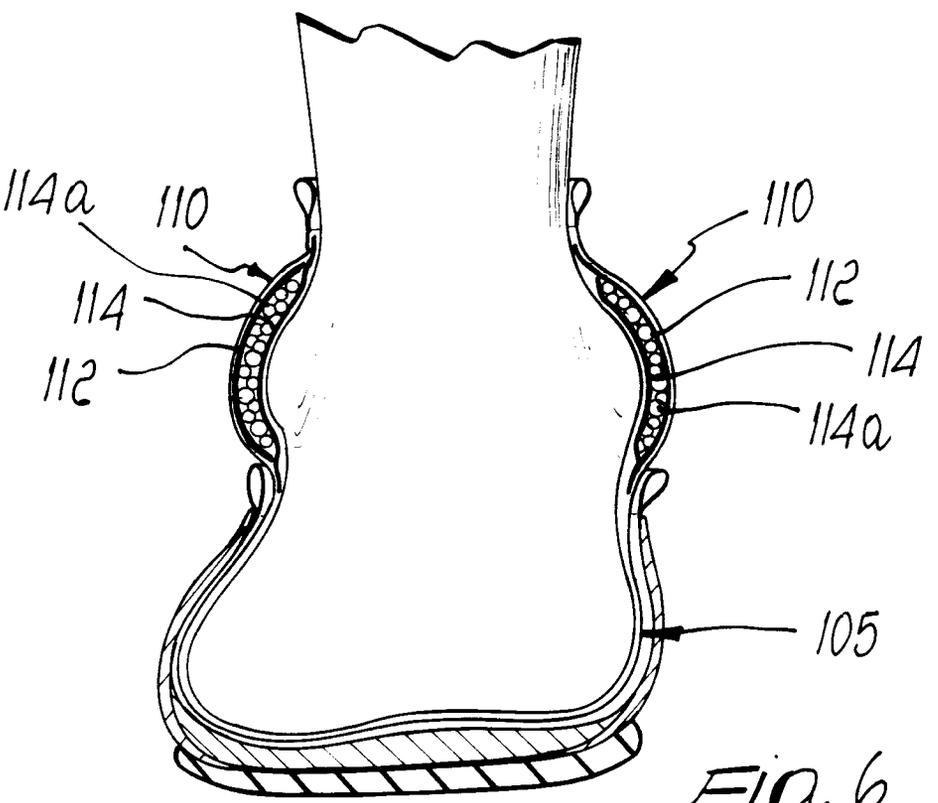
114a
110
110
112
114
114
112
114a
105

Fig. 6

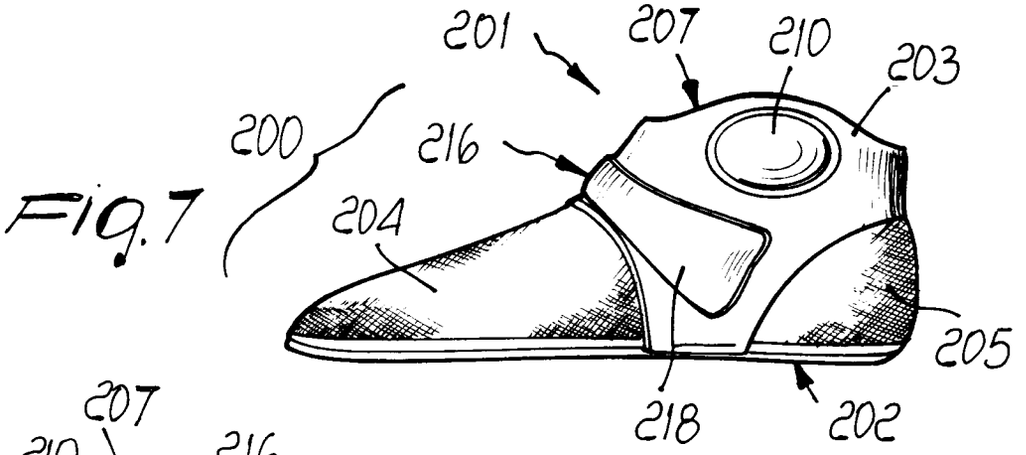

FIG. 7

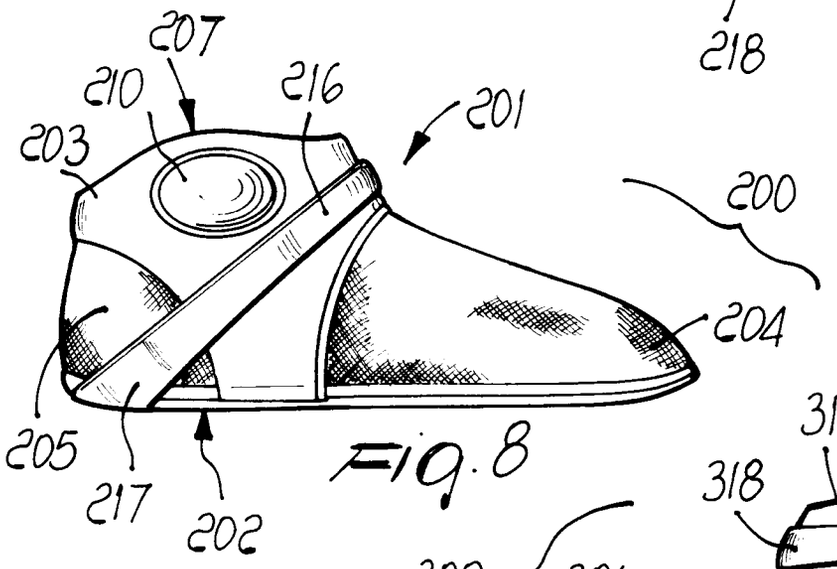

FIG. 8

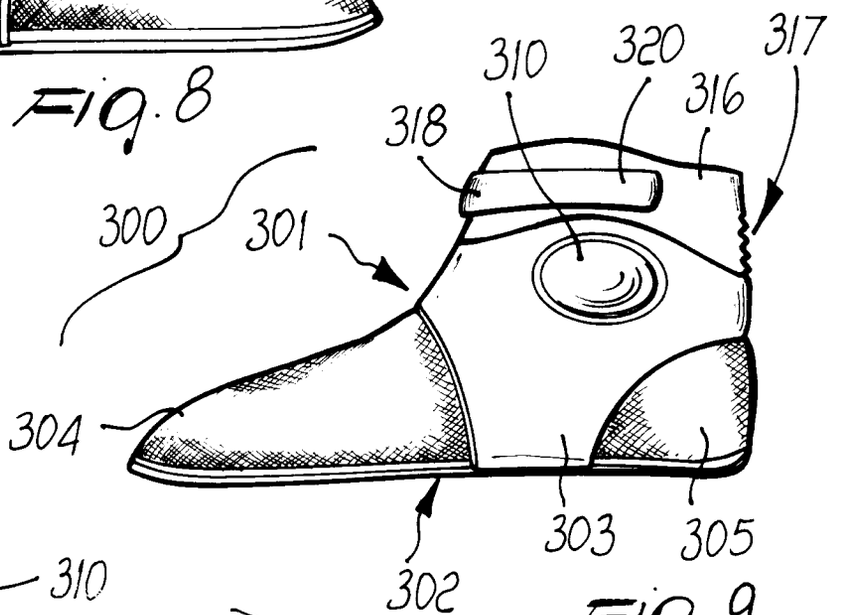

FIG. 9

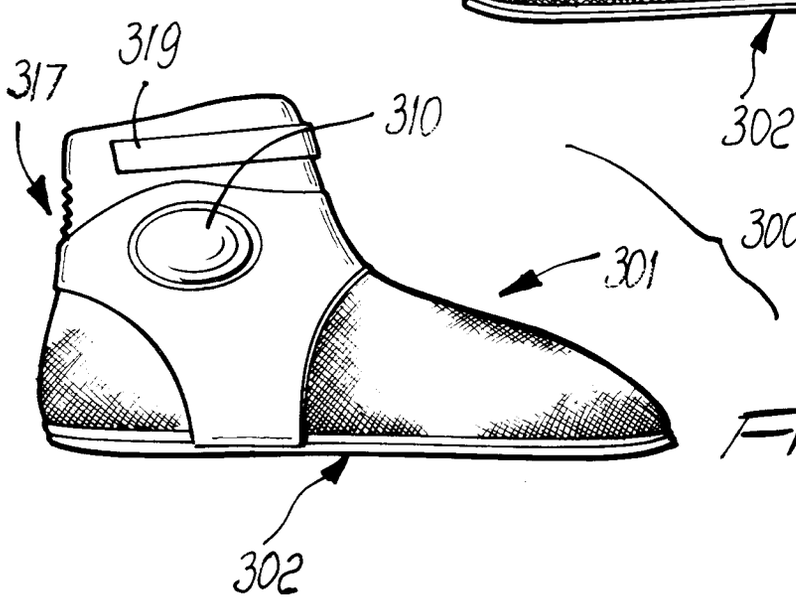

FIG. 10

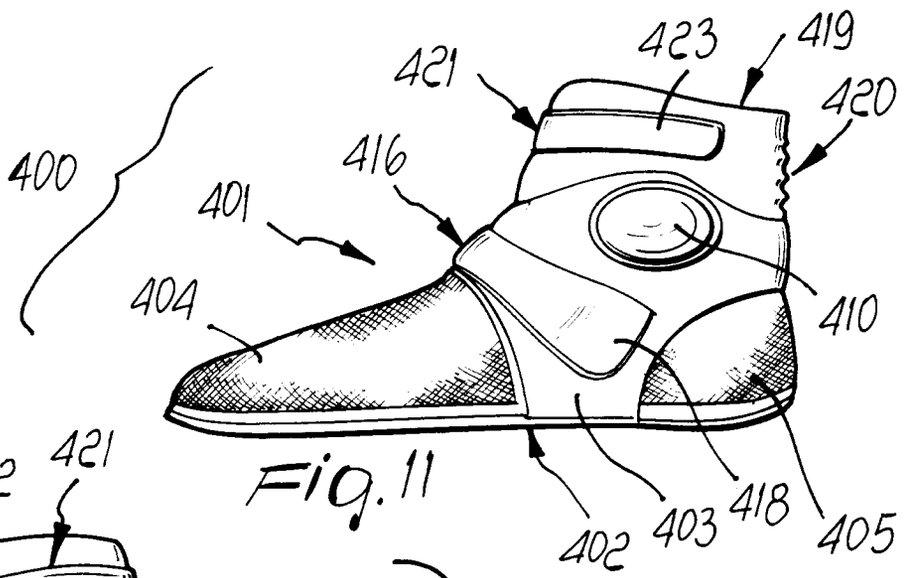

Fig. 11

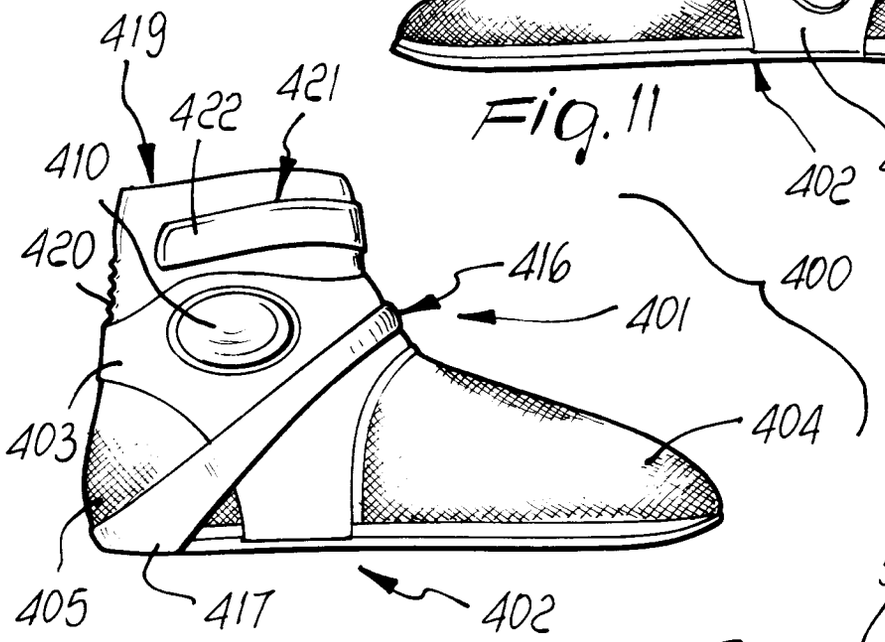

Fig. 12

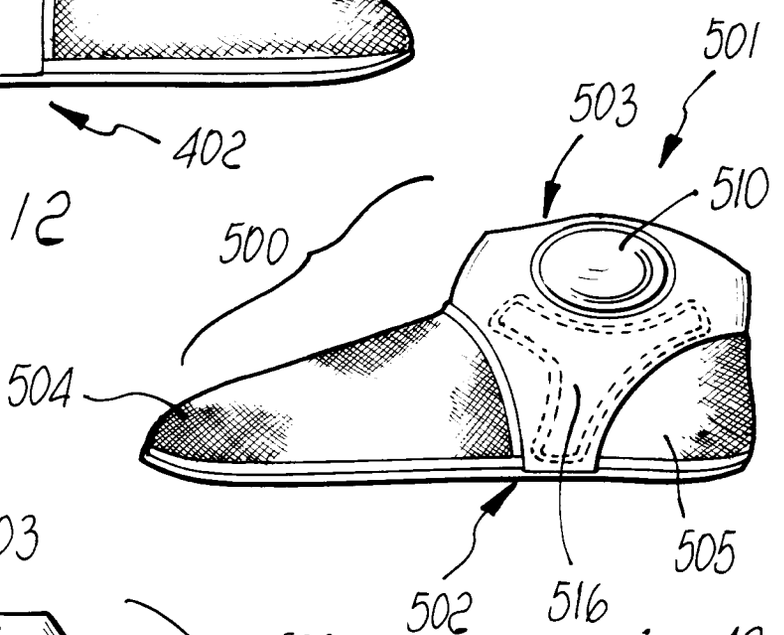

Fig. 13

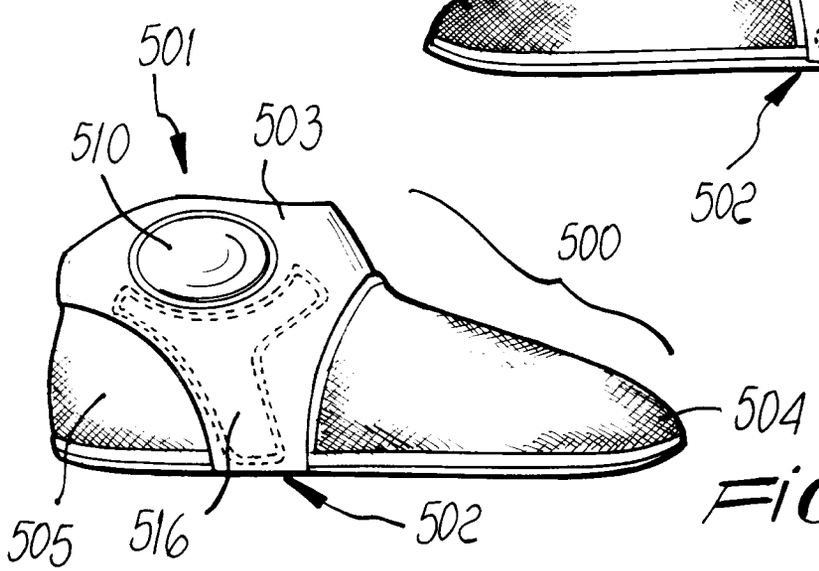

Fig. 14

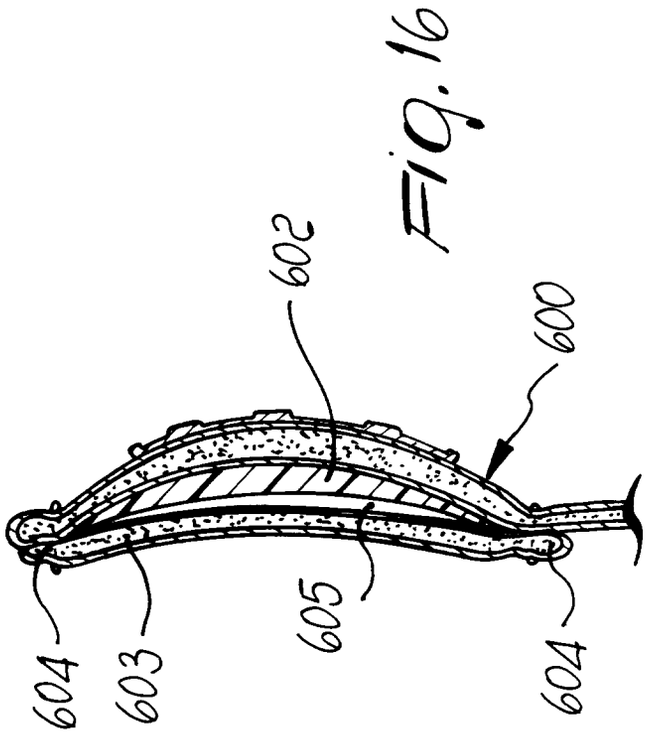

Fig. 16

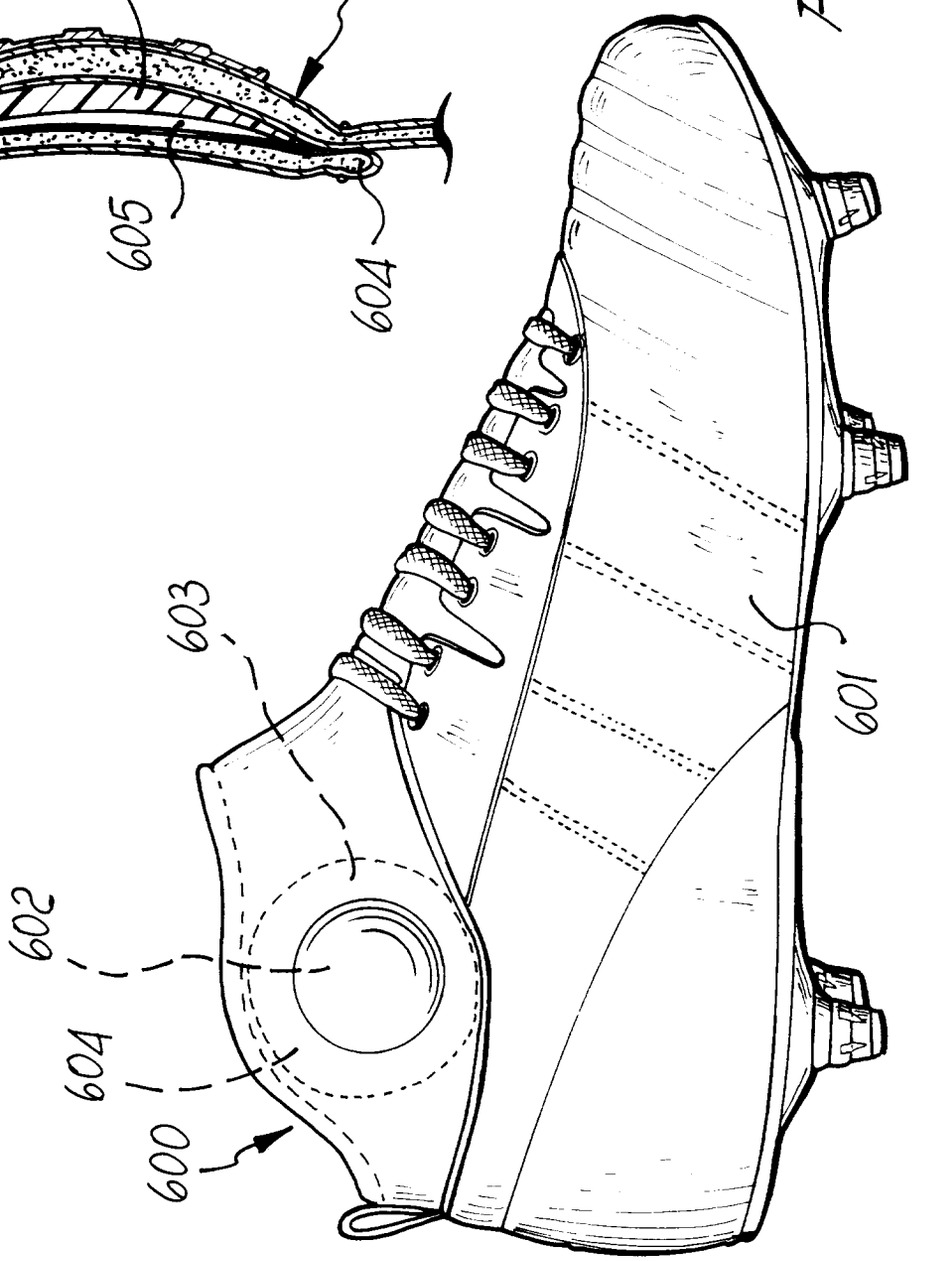

Fig. 15

European Patent Office

EUROPEAN SEARCH REPORT

Application Number EP 95107351.9

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 - 1 593 734 (CLUTSOM-PENN) * Claims 1-4; page 2, lines 4-13 *	1,2	A 63 B 71/12 A 41 D 13/06 A 43 B 7/20
A	US - A - 4 630 600 (SPENCER) * Abstract; figs. *	1-22	
A	US - A - 4 938 777 (MASON) * Abstract; fig. 1,3,4 *	1-22	
A	US - A - 4 864 741 (BEAUCHEMIN) * Abstract; figs. *	1-22	
A	US - A - 4 397 105 (RICHARDSON) * Abstract; fig. 1,2 *	1-22	
A	US - A - 4 497 070 (CHO) * Abstract; fig. 1-11 *	1-22	TECHNICAL FIELDS SEARCHED (Int. Cl.6) A 63 B 71/00 A 41 D 13/00 A 43 B 7/00 A 43 B 5/00
A	DE - A - 3 542 983 (JANITÄTSHAUS ORBI) * Abstract; fig. 1-3 *	1-22	
A	DE - A - 2 607 628 (DASSLER) * Claims 1,8,9,11,12; fig. *	1-22	

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
VIENNA	08-09-1995	SCHÖNWÄLDER

CATEGORY OF CITED DOCUMENTS

X : particularly relevant if taken alone
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D : document cited in the application
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