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(54) Watertight shoe

(57) A watertight shoe provided with a hull-shaped sole (2) with a raised rim (3) to form part of the welt for connection to the edge (48) of an upper (4) and comprising a gasket (7) made of flexible material which can be at least partly seated between the raised rim (3) of the sole (4) and the edge (48) of the upper (4) and has, on at least one of its faces, at least one continuous longitudinal recess (26) which, in use, acts as a gap for preventing water from reaching the inside of the shoe.

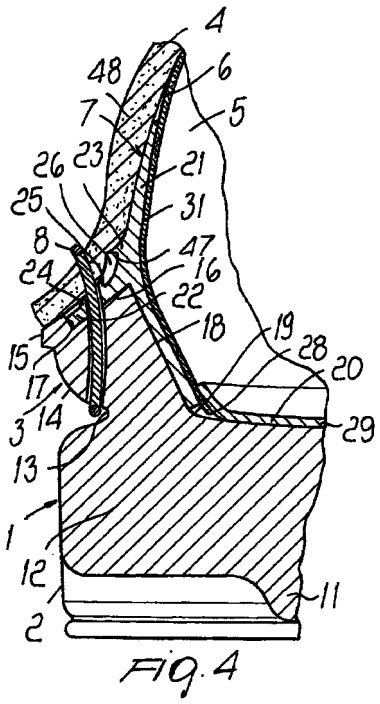

Fig. 4

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Description

[0001] The present invention relates to a watertight shoe with a sole made of synthetic material.

[0002] Owing mainly to aesthetic requirements, there is market demand for shoes with a generally hand-made visible seam along the welt between the sole (hull) and the edge of the upper.

[0003] This requirement could be met only to the detriment of the watertightness of the shoe, since undoubtedly watertightness between the hull and the upper cannot be ensured by a simple seam. On the other hand, the use of adhesives in shoes is increasingly discouraged for hygienic and ecological reasons.

[0004] Furthermore, even if the upper of a shoe is constituted of water-repellent fabrics and/or leathers, fine gaps or passages tend to form between the edge of the sole and the edge of the upper pressed against the edge of the sole by the seam in the presence of water which assist capillary effects to occur, thereby causing external water to be transferred inside the sole and thus wetting the user's foot.

[0005] The main object of the present invention is to provide a watertight shoe which can eliminate or significantly reduce the drawbacks referred to above.

[0006] Another object of the present invention is to provide a watertight shoe which is suitable for preventing water from reaching the inside of the shoe owing to capillary phenomena.

[0007] Another object of the present invention is to provide a watertight shoe which is of new conception, simple to be produced and at competitive costs.

[0008] These and other objects which will become better apparent hereinafter are achieved by a watertight shoe provided with a hull-shaped sole with a raised rim to form part of the welt for connection to the edge of an upper, and characterized in that it comprises an outer side recess throughout the periphery of the sole rim, thereby delimiting, in use, anticapillary gap preventing any water between said sole rim and the upper edge from reaching the inside of the shoe. Advantageously, a gasket made of flexible material is at least partly seated between the said raised rim of the sole and the edge of the upper and said outer side recess is formed in said gasket.

[0009] More advantageously, said gasket has two longitudinal lateral rib portions, which are parallel to said longitudinal recess and delimit a confined strip designed to be crossed by the stitched seam between the sole and the upper.

[0010] Further aspects and advantages of the present invention will become better apparent from the following detailed description of some currently preferred embodiments thereof, given merely by way of non-limitating example with reference to the accompanying drawings, wherein:

Figure 1 shows a side elevational view of a hull-shaped sole having a raised peripheral rim;

Figure 2 is a cross-section view on an enlarged scale taken along the line II-II of Fig. 1;

Figure 3 is a partial diagrammatic cross-section view of a watertight shoe according to the invention;

Figure 4 is a partial cross-section view of another embodiment of a shoe according to the invention;

Figure 5 is a reduced-scale front elevation view of an annular gasket for the shoe of Fig. 4;

Figure 6 is an enlarged-scale partial sectional view, taken along the line III-III of Figure 5;

Figure 7 is a partial top view of Figure 6; and

Figure 8 is a reduced-scale partial front sectional view of a further embodiment of a shoe according to the invention.

[0011] In the accompanying drawings, identical or similar parts or components have been designated by the same reference numerals.

[0012] Initially with reference to Figures 1 to 3 of the drawings, the reference numeral 1 generally designates a shoe according to the invention, which comprises a hull-shaped sole 2 provided with a raised rim 3 which is arranged to act as support for the edge of an upper 4 which is internally lined or covered by a covering or lining 6 made of any suitable material, such as fabric, leather or the like.

[0013] The rim 3 constitutes an upper peripheral portion of the hull-shaped sole and is preferably delimited by an outer peripheral groove 13 extending all around the sole. At the top, the rim 3 is formed with a slot 43 having a bottom surface slightly sloping down and preferably formed with a plurality of regularly spaced perforations 44 extending downwards to the groove 13 level.

[0014] The inner side of the slot 13 is constituted by a substantially vertical inner rib 45 which is greater in height than the corresponding outer side rib 46 and has an enlarged upper portion thereof delimiting a peripheral shoulder 47 above the slot 43. The shoulder 47 is designed to keep, in use, a peripheral position of the lower edge 48 of the upper 4 away from the rib 45 so as to delimit therewith an annular anticapillary gap 49, thereby preventing water to climb up the inner rib 45 to reach the inside of the shoe 1.

[0015] As is shown in Fig. 3, the lower edge 18 of the upper 4 is sewn by means of stitches 8 extending throughout the pre-formed perforations 44, so that its lower peripheral border is seated in the slot 43 and any water collected in the slot 43 or in the gap 48 is transferred and discharged throughout the perforations 44 and stitches 8.

[0016] Figures 4 to 7 show another embodiment of the invention, where a gasket 7 made of any suitable flexible material, for example synthetic rubber, is provided between the rim 3, the lower edge of the upper 4 and the inner covering or lining 6. The peripheral lower edge 18 of the upper 4 and the gasket 7 are kept tightly coupled to the rim 3 by means of a visible seam 8 or with

another suitable mechanical fixing means.

[0017] The recess 13 is preferably surmounted by a convex rim portion 14 which terminates with an upper border 15. The top of the rim 3 has a flat-bottomed slot 16 which can be slightly sloping down and delimits an inner shoulder 17 facing towards the inside of the sole. The inner surface 18 of the rim 3 is flat or slightly curved and radiused at 19 with the internal bottom surface 29 of the sole 2.

[0018] The gasket 7 has an annular configuration and is formed by a flat part or band 21 from which there laterally extends an intermediate portion 22 arranged to be seated in the slot 16 in abutting engagement against the inner shoulder 17.

[0019] Preferably, the upper face of the intermediate portion 22 is formed with two ridges 24 and 25. At the junction between the intermediate portion 22 and the band 21 there is provided an enlarged portion 23 delimiting a peripheral shoulder 17 which delimits, in turn, an uninterrupted peripheral recess 26 together with the ridge 25.

[0020] With reference to Figure 8, it will be seen that the ridge 25 is preferably segmented for a reason explained hereinbelow, whereby delimiting discontinuities or passages 27.

[0021] The upper 4 is fixed to the rim 3 by means of the visible seam 8, whose thread passes through the lower edge 48 of the upper 4, the gasket 7 between the two ridges 24 and 25 and the entire thickness of the welt rim 3 and ends within the recess 13 of the sole 2. Both the seam 8 and the gasket 7 extend throughout the entire perimeter of the sole 2.

[0022] The fabric 6 can be fixed to the internal part of the upper 4 and covers the inner face of the band 21 of the gasket 7, adapting to it and ending with a lower limb 28 extending below an insole 29 which rests on the internal surface 20 of the sole 2.

[0023] The flexibility and deformability of the material that constitutes the gasket 7 ensures perfect adaptability thereof to the configuration of the shoe 1.

[0024] The presence of the expansion 23 and the recess 26 keeps, in use, the upper 4 spaced from the gasket 7, so that the recess 26 acts as an anticapillary gap preventing water from climbing up owing to capillary action between the gasket and the sole to reach the inside of the shoe.

[0025] Water is thus collected inside the recess 26, from which it can be discharged through the passages 27 in the ridge 25 and drained outside through the holes 44 of the seam 8, being also assisted by the pumping effect produced by the movement of the foot while walking.

[0026] According to another embodiment of the present invention a mid-sole 33 between the sole 2 and the insole 29 is provided (Figure 7).

[0027] In this embodiment, the sole 2 has a rim 3 with no border 15 and formed with the slot 16. The internal face 18 of the rim 3 is flat and ends substantially at right angles with the internal bottom surface 20 of the sole 2. The sole, together with the rim 3, delimits a seat for the mid-sole 33, having a peripheral ridge 36 and transverse ridges 37. The lower surface 38 of the mid-sole 33, in contact with the sole 2, can be formed with slots 39 connected to the upper surface 40 through small vent holes 41.

[0028] Below the intermediate portion 22, the band 21 of the gasket 7 is seated between the mid-sole 33 and the rim 3, which keep it substantially flat, whilst above the portion 22 the band 21 is maintained flat by the insole 29 which presses it, possibly through the lining 6, against the upper 4. The intermediate portion 22 covers the entire upper surface 16 of the rim 3 and is crossed, as described above, by the stiches 8 which extend through the two ridges 24 and 25.

[0029] In any case, the gasket 7 protects the inside of the hull-shaped sole 2 against undesired water seepage. In particular, it protects the inside of the shoe 1 against water infiltrations caused by capillary action, since it prevents water collected in the recess 26 from climbing up along the inner surface of the upper 4.

[0030] During manufacture, the intermediate portion 22 of the gasket 7 is placed on the upper surface 16 of the rim 3 and provides a correct reference for carrying out the fixing seam 8, which extends between the two ridges 24, 25.

[0031] The great flexibility and structural simplicity of the gasket 7 make it possible to adapt it to any kind of hull-shaped sole to provide watertightness.

[0032] Fixing the gasket 7 to the welt 3 and to the upper 4 by means of a single deep seam 8 reduces production times and avoids the use of adhesives.

[0033] The disclosures in Italian Patent Application No. VR98A000066 from which this application claims priority are incorporated herein by reference.

[0034] 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. A watertight shoe provided with a hull-shaped sole (2) with a raised rim (3) to form part of the welt for connection to the edge (48) of an upper (4), and characterized in that it comprises an outer side recess (13) extending throughout the periphery of the sole rim (3), thereby delimiting, in use, an anticapillary gap (49; 26) preventing any water between said sole rim (3) and the upper edge (48) from reaching the inside of said shoe (1).

2. The shoe according to claim 1, characterized in that it comprises a gasket (7) made of flexible material

and at least partly seated between the raised rim (3) of the sole (2) and the edge (48) of the upper (4), said outer side recess (26) being formed in said gasket (7).

3. The shoe according to claim 2, characterized in that said gasket (7) has a flat portion or band (21) which is designed to be arranged inside the shoe (1).

4. The shoe according to claim 2 or 3, characterized in that said gasket (7) has, on its face arranged to be directed towards said upper (4), a recess (26) delimiting a gap for preventing capillary effects, thereby preventing water between the gasket (7) and the upper (4) from climbing up towards the inside of the shoe (1).

5. The shoe according to any one of the preceding claims 2 to 4, characterized in that said gasket (7) has two parallel raised portions or ridges (24, 25) which extend from the same face of said gasket (7) to delimit a stitching region therebetween.

6. The shoe according to claim 5, characterized in that a raised portion (25) closest to said recess (26) is segmented to allow drainage of water from said recess (26).

7. The shoe according to claims 5 or 6, characterized in that said gasket (7) is fixed to said rim (3) and to said upper (4) by sewing along said stitching region.

8. The shoe according to one or more of the preceding claims, characterized in that said gasket (7) is annular in shape and its length is such as to extend over the entire periphery of said shoe (1).

9. The shoe according to one or more of the preceding claims, characterized in that the upper surface of said rim (3) of the sole (2) has a seat (43, 16) designed to accommodate at least partly said gasket (7).

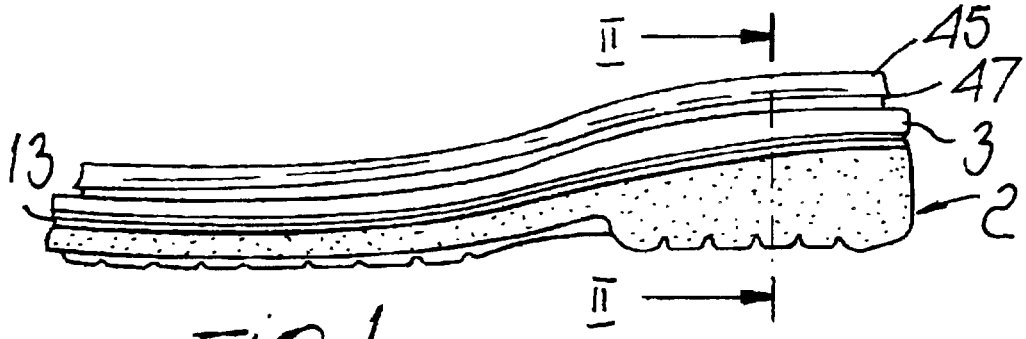

FIG. 1

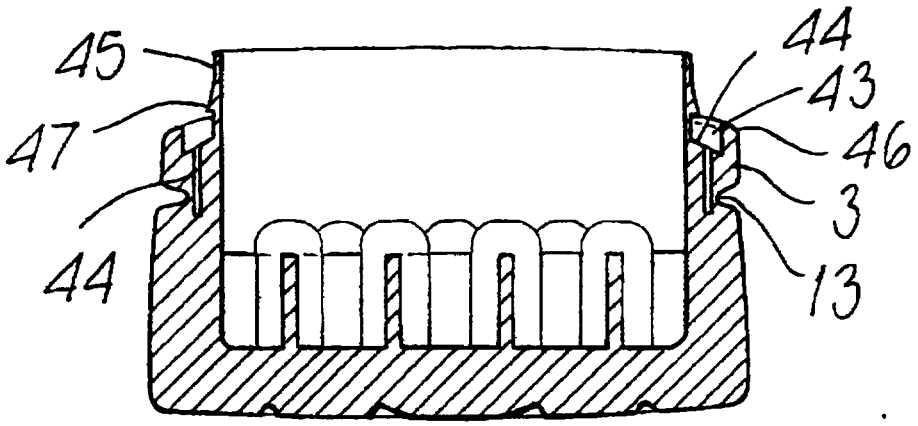

FIG. 2

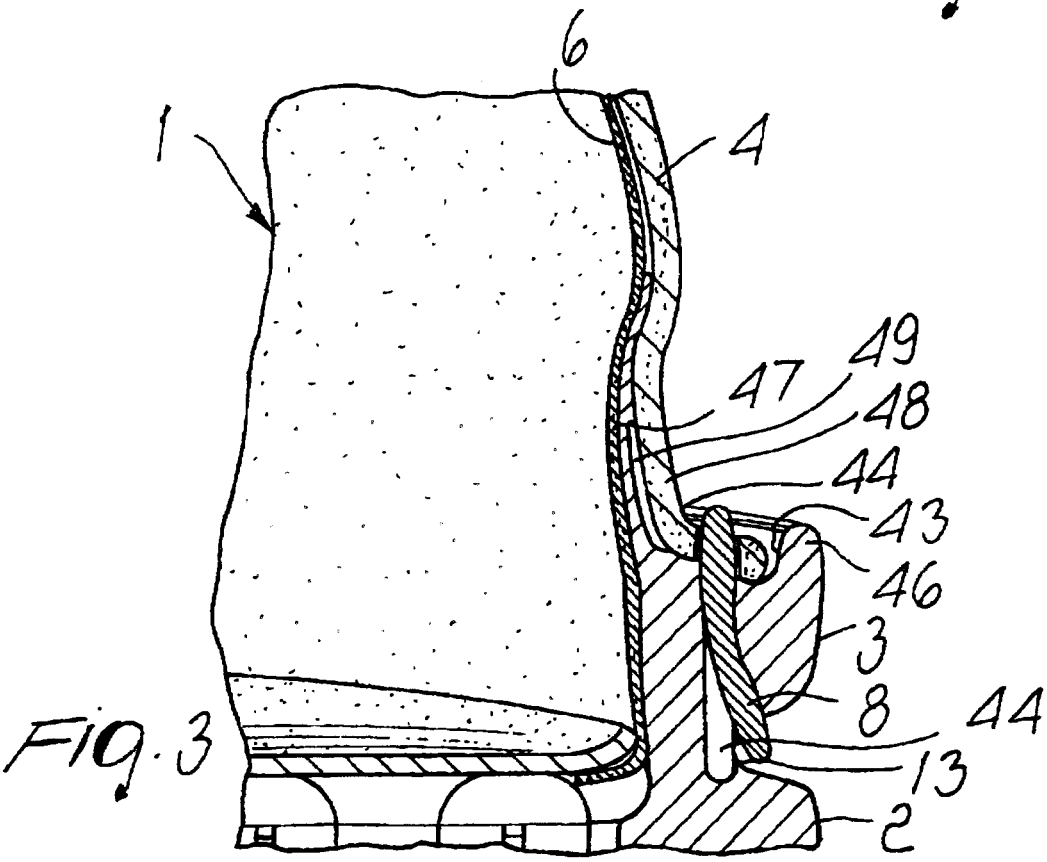

FIG. 3

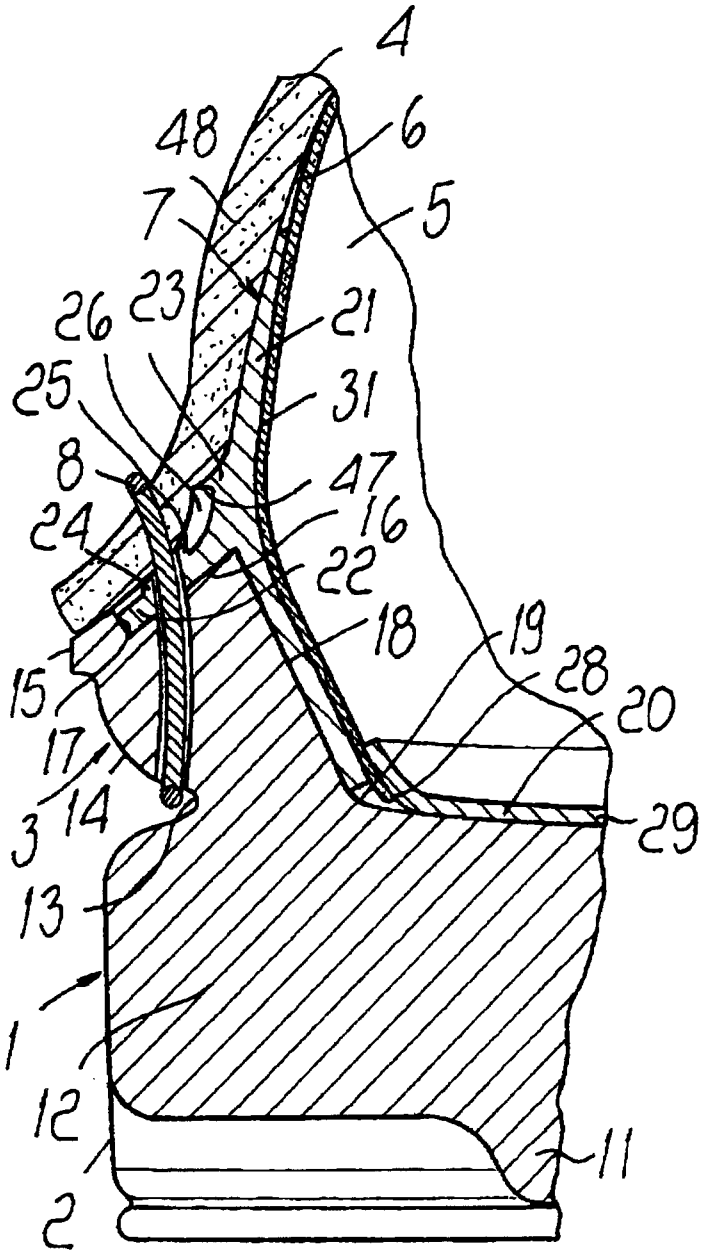

FIG. 4

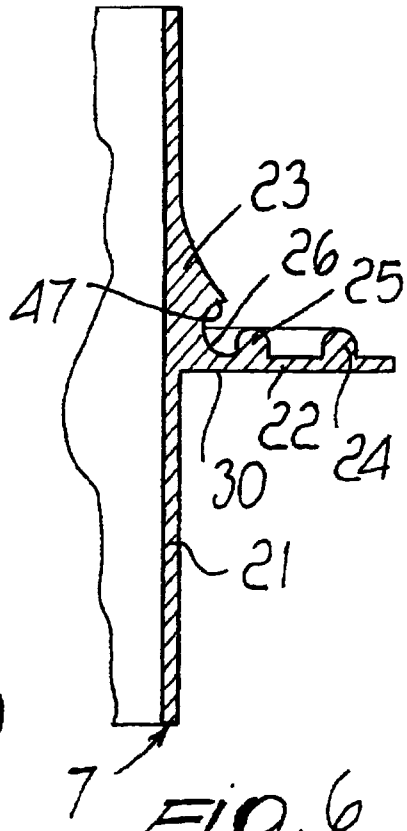

FIG. 6

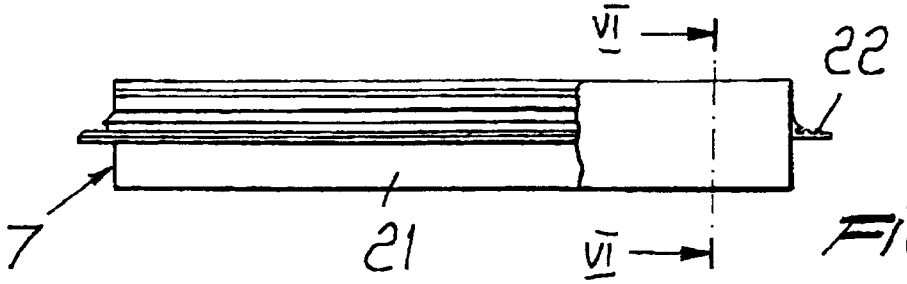

FIG. 5

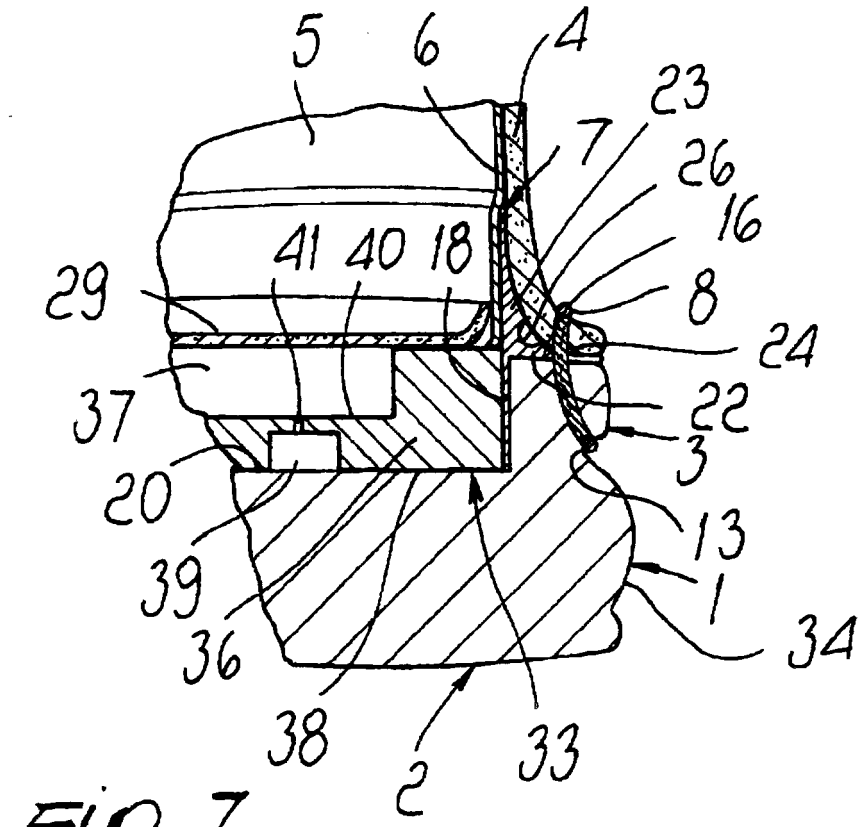
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Fig. 7

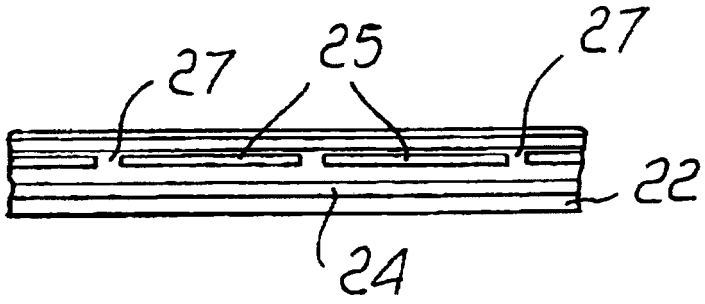
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Fig. 8

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EUROPEAN SEARCH REPORT

Application Number
EP 99 11 4162

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.7)
A	DE 195 05 550 A (HELIX SCHUHFABRIK GMBH & CO) 22 August 1996 (1996-08-22) * claim 1; figure 3 * ---	1,2,8,9	A43B7/12
A	FR 2 470 551 A (SALOMON & FILS F) 12 June 1981 (1981-06-12) -----		

TECHNICAL FIELDS SEARCHED (Int.Cl.7)

A43B

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
THE HAGUE	15 October 1999	Claudel, B

CATEGORY OF CITED DOCUMENTS

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15-10-1999

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