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(54) **A sole of a shoe with insert**

(57) Described herein is a sole (2) of a shoe, of the type made of polyurethane material via injection moulding or casting, the said sole being provided with at least one insert made of rubber, preferably of a cylindrical

shape, with a circumferential groove (7) having a preferably semi-circular cross section. The insert is set in such a position that at least one (5) of the two faces is external to the sole (2) and is designed to come into contact with the ground.

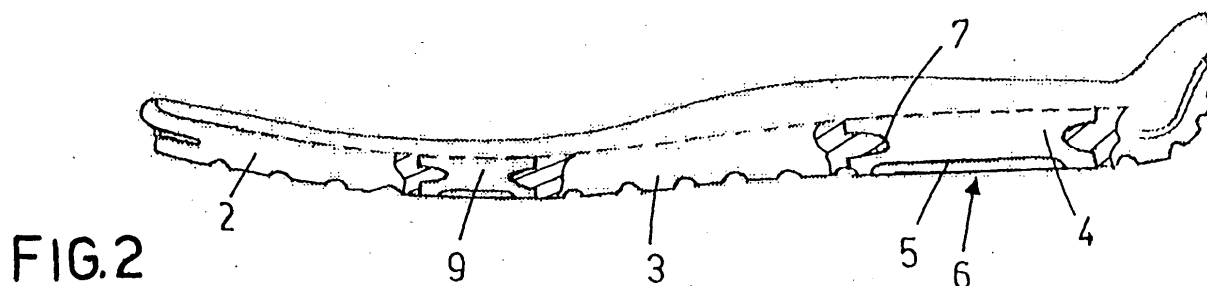


FIG. 2

Description

[0001] The present invention relates to the sole of a shoe made of polyurethane with an insert which varies the consistency thereof and the response thereof to stresses and increases grip thereof on the ground.

[0002] Known to the prior art are soles for shoes, in particular sports shoes, which have inserts, normally made of elastomeric material with differentiated rigidity, which are designed to vary the characteristics of elasticity, compressive strength, torsional strength, etc. of the material making up the sole.

[0003] In particular, the above inserts are generally positioned in the heel of the shoe, which should be what has the greatest influence on the overall behaviour of the shoe when worn.

[0004] However, this type of sole with inserts is not suitable for preventing it from possibly slipping when it comes into contact with a wet surface or, what is worse, a frozen surface during the winter period.

[0005] The purpose of the present invention is to provide a sole for a shoe that will overcome the drawback referred to above.

[0006] The said purpose is achieved by a sole for a shoe provided with at least one insert that has the characteristics specified in Claim 1.

[0007] Further characteristics and advantages of the present invention will emerge clearly from the ensuing description, with reference to the attached drawings, which are provided purely by way of non-limiting example and in which:

- Figure 1 is a plan view of the sole of a sports shoe provided with inserts according to the invention;
- Figure 2 is a partially cross-sectional side view of the sole of Figure 1;
- Figure 3 is a plan view of the sole of a shoe with heel provided with an insert according to the invention;
- Figure 4 is a partially cross-sectional side view of the sole of Figure 3;
- Figure 5 is a perspective view of a second embodiment of the insert according to the invention provided with holes parallel to its axis;
- Figure 6 is a top plan view of the insert of Figure 5;
- Figure 7 is a cross-sectional view of the insert inserted in the heel of the sole, taken along the line VI-VI of Figure 6;
- Figure 8 is a side view of a third embodiment of the insert according to the invention provided with holes perpendicular to its axis;
- Figure 9 is a cross-sectional view of the insert taken along the line X-X of Figure 8;
- Figure 10 is a partially cross-sectional perspective view of a further embodiment of the insert according to the invention;
- Figure 11 is a view of a detail of the insert of Figure 10; and

- Figure 12 is a cross-sectional view of yet a further embodiment of the insert according to the invention.

[0008] With reference to the attached figures and initially in particular to Figures 1 and 2, the reference number 2 designates the sole of a shoe, in the case illustrated a shoe of a sports type made by moulding from polyurethane material, adopting an injection-moulding process or obtained by casting, the said sole being provided with a surface of contact with the ground made, in the case illustrated, with a pattern having projections 3.

[0009] The above-mentioned sole has, in the central part of the heel 3, i.e., in the part of the sole on which the heel of the foot rests, an insert 4 preferably having a cylindrical shape, one end face 5 of which is designed to come into contact with the ground, has a preferably elliptical shape and is made with a substantially hemispherical axial groove 6 which bestows thereon a shape similar to a suction pad. The insert 4 has a circumferential groove with a preferably semicircular cross section 7, but may have a cross section of some other shape, for example, a trapezoidal one (Figure 12), without thereby departing from the sphere of protection of the present invention. The aforesaid insert 4 may be made indifferently of rubber, thermoplastic rubber (TR) or else of a polyvinyl material (PVC). The grooved profile, which may be semicircular, trapezoidal or at an angle, of the side wall of the insert 4 enables the problem of joining of two different materials such as, for instance, polyurethane, with which the sole is built and the rubber or TR that constitutes the material of the insert 4, to be overcome without any difficulty.

[0010] Except for a sole with a high heel, suitable for shoes worn by ladies, which has just one insert in a position corresponding to the heel (see Figures 3 and 4), as described previously, all the other soles, whether for sports use or for town use, have a second insert 9 made like the first, except for the elliptical shape of the face. The insert 9 is englobed in the sole, substantially in the area where the front part of the foot rests on the ground, i.e., corresponding to the base of the big toe of the user.

[0011] In a second version of the insert of the invention, illustrated in Figures 5 and 6, the insert is provided with holes 10 for the purpose both of airing the inside of the shoe and of conferring on the insert a differentiated compressive strength. The said holes will be substantially parallel to the axis A of the insert in the case where the aim is to air the inside of the shoe. In this case, the top face of the insert 4 will have a part 11, provided with holes 10, which will protrude from the surface of the inlay-sole 12 inside the shoe (see Figure 7). The aforesaid holes 10 may be perpendicular to the axis A (see Figures 8 and 9) in the case where the aim is just to vary the rigidity and/or elastic response of the sole. Figures 10 and 11 illustrate a further embodiment of the insert, in particular, of the face on the outside of the shoe, which comes into contact with the ground. The said face is pro-

vided with a suction pad 13 made having a profile such as to enable a vacuum or suction effect to be obtained inside it. The suction pad is surrounded by a circular groove 14, which separates it from the outer edge 15 of the sole, in so far as the edge of the suction pad 13 widens, and it is, in effect, the presence of this groove that enables its widening.

[0012] Consequently, the above third embodiment of the insert according to the invention will present a better operation than the ones described previously. As may be seen from Figure 12, the insert 4 may be set in the sole 2 so as not to project with the top edge from the top edge of the sole.

[0013] It remains understood that the shape and the materials employed for making the insert and the sole may vary, without thereby departing from the scope of the present invention, as claimed in the annexed claims.

Claims

1. The sole (2) of a shoe, of the type made of polyurethane material via injection moulding or casting, the said sole being provided with at least one insert made of different material, **characterized in that** said insert is made of rubber and has a preferably cylindrical shape, with a circumferential groove (7) having a preferably semi-circular cross section, said insert being set in such a position that at least one (5) of the two faces is external to the sole (2) and is designed to come into contact with the ground.
2. The sole according to Claim 1, **characterized in that** the insert has a circumferential groove with trapezoidal cross section.
3. The sole according to Claim 1, **characterized in that** the insert has a circumferential groove with section at an angle.
4. The sole according to Claim 1, **characterized in that** the insert is made of thermoplastic rubber (TR).
5. The sole according to Claim 1, **characterized in that** the insert is made of polyvinyl material (PVC).
6. The sole according to Claim 1, **characterized in that** the face (5) of the insert in contact with the ground has a preferably elliptical shape.
7. The sole according to Claim 1, **characterized in that** the face (5) of the insert in contact with the ground has a substantially hemispherical axial groove (6) so as to confer on it the shape of a suction pad.
8. The sole according to Claim 1 and Claim 6, **characterized in that** the face (5) of the insert in contact with the ground has a circular groove (14) which separates the hemispherical groove (6) from the external edge (15) of the insert (4).
9. The sole according to Claim 1, **characterized in that** the insert is provided with holes (10) parallel to its axis (A).
10. The sole according to Claim 1, **characterized in that** the insert is provided with holes (10) perpendicular to its axis (A).
11. The sole according to Claim 1, **characterized in that** the insert is inserted in the sole (2) in an area corresponding to the heel of the foot.
12. The sole according to Claim 1, **characterized in that** the insert is inserted in the sole (2) in an area corresponding to the base of the big toe of the foot.
13. The sole according to Claim 1, **characterized in that** the insert (4) is flush with the top surface of the sole.

FIG.1

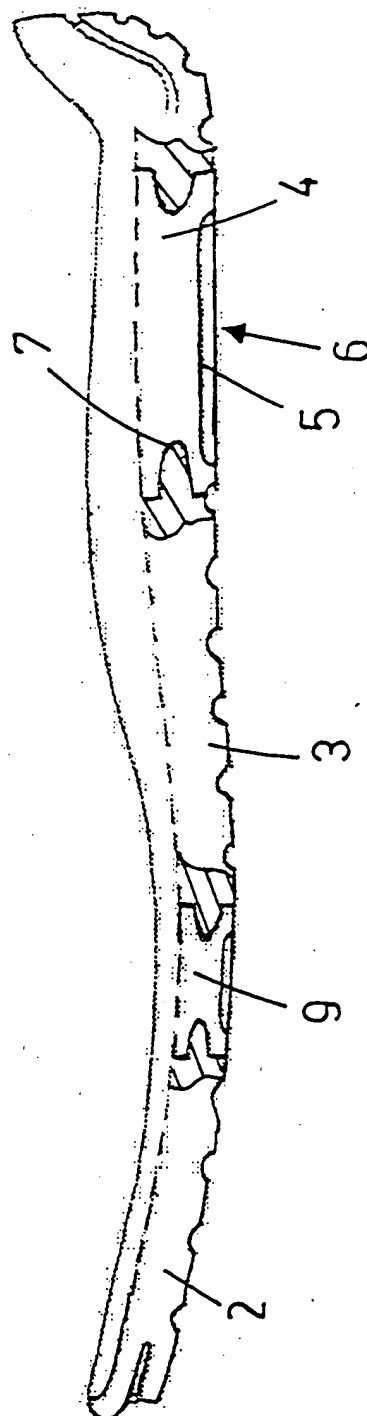
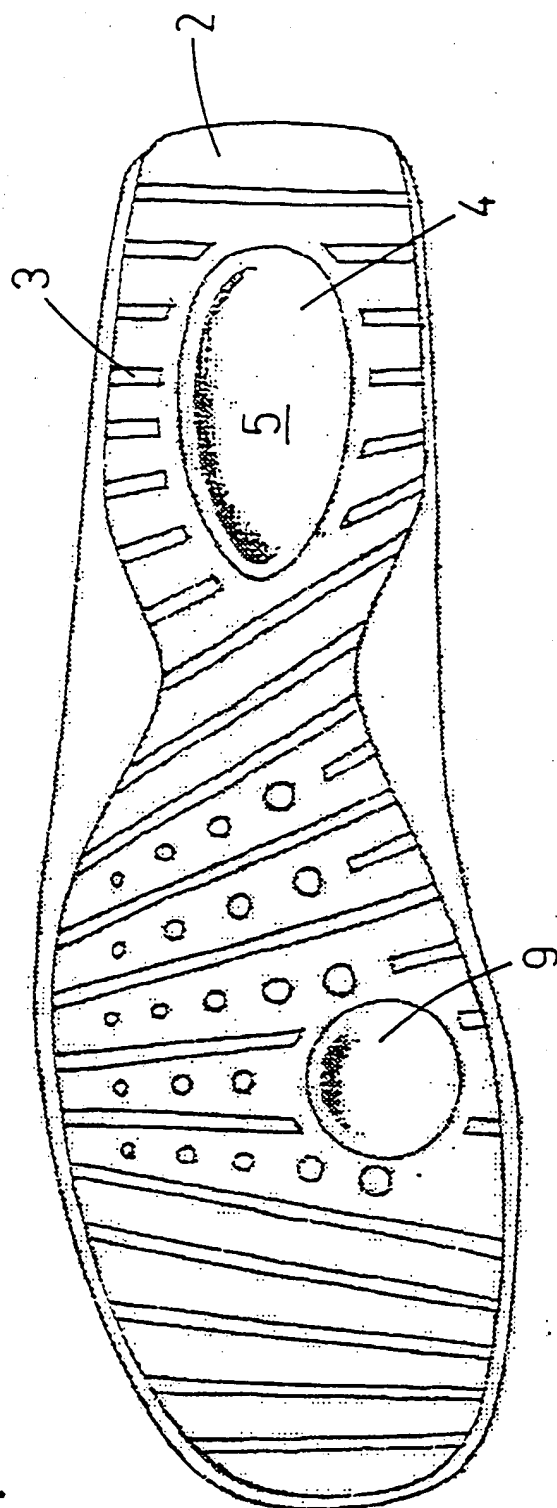


FIG.2

FIG.3

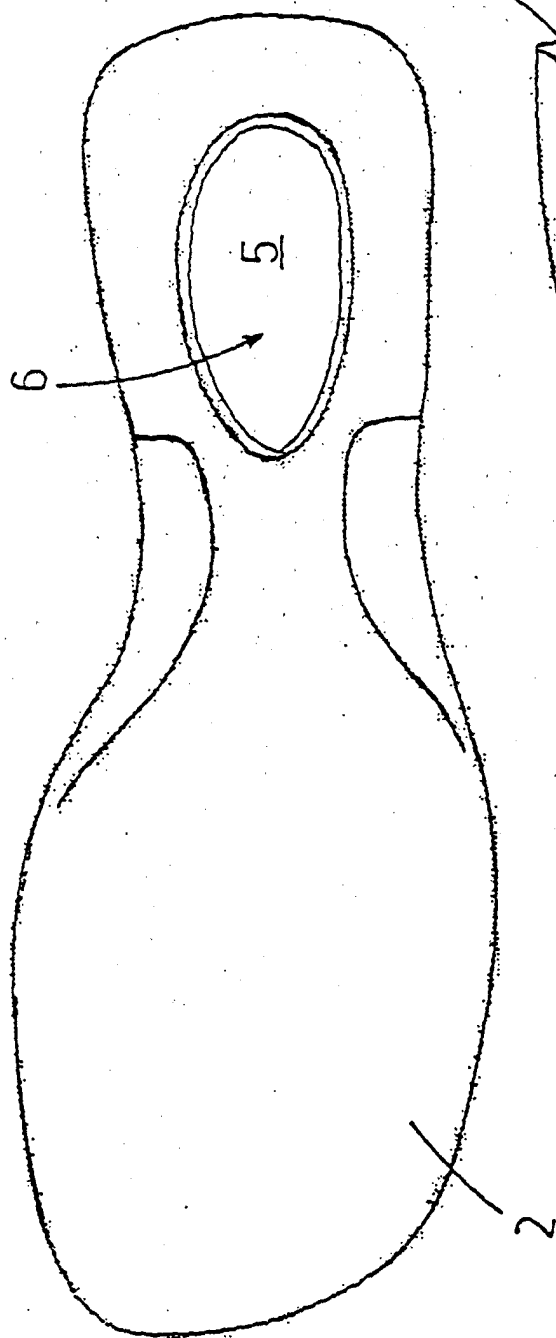
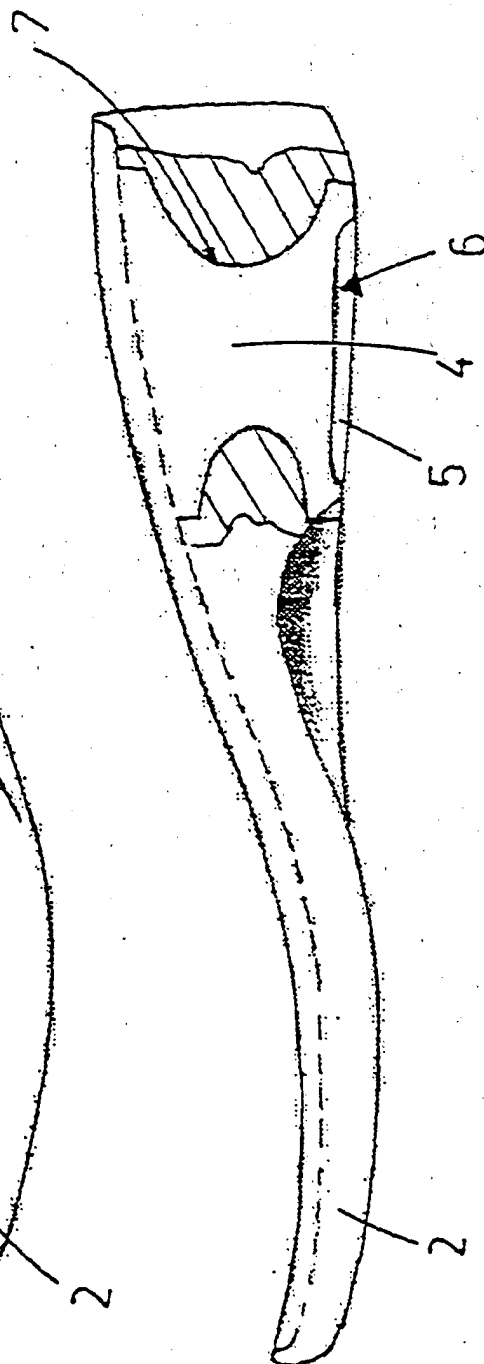
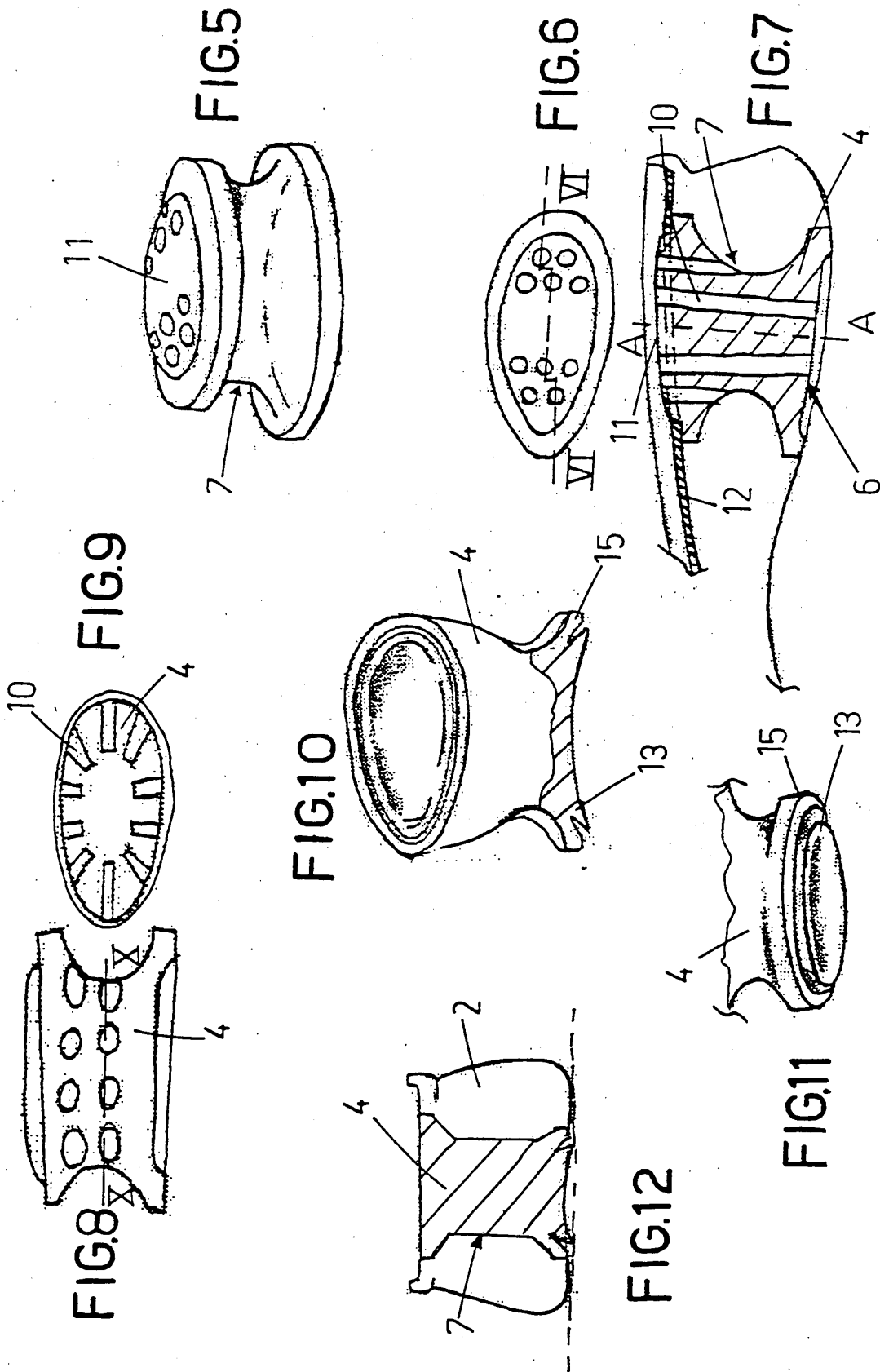


FIG.4







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Application Number
EP 03 00 3323

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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 9 February 2004	Examiner Schölvinck, T.S.
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**ANNEX TO THE EUROPEAN SEARCH REPORT
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