



## INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

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<p>(21) International Application Number: PCT/GB91/02134 (22) International Filing Date: 2 December 1991 (02.12.91) (30) Priority data: 9113272.0 19 June 1991 (19.06.91) GB (71) Applicant (for all designated States except US): ZERMATT HOLDINGS LTD. [GB/GB]; Fairfax House, Fulwood Place, Gray's Inn, London WC1V 6UB (GB). (72) Inventor; and (75) Inventor/Applicant (for US only) : JOHNSTON, Craig [AU/AU]; P.O. Box 274, Potts Point, Sydney, QLD 2011 (AU). (74) Agents: BLATCHFORD, William, Michael et al.; Withers &amp; Rogers, 4 Dyer's Buildings, Holborn, London EC1N 2JT (GB).</p>		<p>(81) Designated States: AT (European patent), AU, BB, BE (European patent), BF (OAPI patent), BG, BJ (OAPI patent), BR, CA, CF (OAPI patent), CG (OAPI patent), CH (European patent), CI (OAPI patent), CM (OAPI patent), CS, DE, DE (European patent), DK (European patent), ES (European patent), FI, FR (European patent), GA (OAPI patent), GB, GB (European patent), GN (OAPI patent), GR (European patent), HU, IT (European patent), JP, KP, KR, LK, LU (European patent), MC (European patent), MG, ML (OAPI patent), MN, MR (OAPI patent), MW, NL (European patent), NO, PL, RO, SD, SE (European patent), SN (OAPI patent), SU, TD (OAPI patent), TG (OAPI patent), US.</p> <p>Published With international search report.</p>
<p>(54) Title: FOOTBALL BOOT</p>		
<p>(57) Abstract</p> <p>A football boot (10) comprises an upper (12) formed with a ball contact surface (24) which is resilient. The ball contact surface may be generally flat and/or concave and provided with a plurality of formations formed of an elastomeric material, wherein the ball contact surface (24) and/or the formations are deformable upon contact with a ball. The boot allows a player to have greater ball control and execute more powerful and accurate kicks than with a conventional boot.</p>		

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FOOTBALL BOOT

This invention relates to a football boot and also to a kit for modifying a conventional football boot. The term 'football boot' as used herein means a boot which is used not only as a boot for playing football but for any sport which involves a player kicking a ball.

With a conventional football boot, in common with most other kinds of footwear, the front upper portion of the boot which covers the bridge and toes of a wearer's foot is convex-shaped to conform to the shape of the foot. In order for a player to effect a more controlled kick, shot, or hard pass, the ball ideally must be in contact with one of a number of 'sweet spots', the main one being a central area on the upper portion of the boot. With conventional football boots, it is difficult precisely to locate the optimum part of the ball surface on this area, and success therefore depends to some extent on chance or ability.

Also, heretofore football boots have been provided with leather, plastic or like material surfaces on which a ball tends to slip, especially in wet conditions, thereby reducing a player's ability to control the ball.

By using this invention these disadvantages are somewhat lessened by the provision of a football boot having an upper formed with a ball contact surface which is resilient at least in part. The resilient part of the ball contact surface may be in the form of a pad which may be formed of cellular material including gas or air filled voids. Preferably the ball contact surface is generally flat and/or concave in shape and is provided with a plurality of formations formed of an elastomeric material, wherein the ball contact surface and/or

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formations are deformable upon contact with a ball. In addition to or instead of being generally flat and/or concave, the ball contact surface may be relatively thin in comparison with a relatively thicker boundary region.

The invention also provides a kit for modifying a conventional football boot which comprises a moulding having a ball contact surface which is resilient, and means for securing the moulding to the upper of a football boot. Preferably, the ball contact surface is formed of a non-slip material such as rubber and has formations which are arranged to grip and cushion a ball which comes into contact with the surface. The formations may take the shape of parallel extending ribs or nipples having malleable upper edges that can deform to grip the ball, or, alternatively, projections with sharp edges that can bite into the ball. The ball contact surface may be tacky in nature instead of, or in addition to, being provided with formations.

The ball contact surface may be partly concave and partly flat but in general is shaped to allow as much surface contact as possible with the surface of the ball at any one time. An upwardly facing ball contact surface and a sidewardly facing ball contact surface may be provided at the top and sides of the boot upper, respectively. The flat or concave sidewardly facing ball contact surface or surfaces are curved to conform to the outline of the wearer's foot.

In particular, the upwardly facing ball contact surface may be generally parallel to the sole beneath, while at the sides and at the toe the upper may be generally perpendicular to the sole, forming a wall which

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terminates in a distinct and comparatively less yielding upper edge bounding the upwardly facing contact surface.

Preferably, the upper edge is a raised lip on the front and on one or both sides. The sidewardly facing ball contact surface is bounded by such an upper lip, and a lower lip may be provided at the bottom of the boot where the side joins the sole. The material of the boot in the region of the lip or lips may be thicker than the material elsewhere. Alternatively, the height of the ribs or projections may be greater in the region of the lip or lips than elsewhere.

The raised lips may be formed integrally with the respective front and side portions of the boot and it is preferred that the whole football boot be injection moulded from a single material. In the case of the kit, the moulding may be secured to the upper of the boot by means of adhesive or stitching and the kit may also include instructions for applying the moulding to the boot. In general, the moulding would be applied to sweet spot areas at the top and sides of a conventional football boot.

Some advantages of the preferred boot are as follows:

1. By having more boot surface in contact with the ball in comparison to a conventional boot, the user has a greater ability to control or work the ball, that is, to bend the ball, impart hook-spin, slice-spin, top-spin, back-spin, and generally make the ball move technically in the air. The greater the opportunity for movement, the greater is the opportunity for accuracy.
2. The gloving effect of a greater contact area serves to take the pace off the ball when receiving a pass.

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3. This gloving or cushioning effect stabilises the movement of the ball momentarily before assisting in its redirection.

4. If the point of contact has been inaccurate, the concave surface tends to direct the centre of the ball back to the crucial central catchment area, that is, the sweet-spot.

5. Unlike leather, the material of the ball contact surface has an inherent energy creating greater power when the ball is kicked, or less effort from the kicker. Again, this feature allows for greater accuracy.

In general, at least 30% of the ball contacting surface is flat or concave and with the upwardly facing ball contact surface the longitudinal extent of the surface is generally proportional to the transverse extent.

Synthetic or natural elastomeric material, such as styrene-butadiene, polyurethane, or rubber, may be used for the ball contacting surface and its various properties and thickness are chosen in accordance with the function of the boot. Thus, for power kicking the rubber material is of sufficient thickness to remain stable upon impact with the ball, the inner surface next to the foot deforming comparatively little, whereas for dribbling the material is thinner and more flexible so that the wearer can feel the ball.

In a preferred embodiment, at least part of the football boot upper is formed of an inner layer of soft leather and an outer layer of an elastomeric material. The leather layer provides comfort to the wearer while the elastomeric layer provides the advantages outlined above. The whole of the outer of the boot may be of elastomeric material but it is preferred that a lighter

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weight material be used for those areas of the boot which are not intended to contact the ball such as the parts of the boot covering the heel and bridge of the foot. Examples of suitable light weight materials which may be used for the non-ball contacting areas of the boot include fabrics and plastics.

The invention also provides a method of manufacturing a football boot which comprises moulding an elastomeric material to form a ball contact surface provided with a plurality of formations. Preferably, the elastomeric material is moulded onto a lining which may be formed of leather.

Although the shape and thickness of the layer forming the ball contacting area of the boot will depend upon whether the boot is to be used for power kicking or dribbling, it is also possible to convert a boot adapted for one function into a boot adapted for a different function by applying detachable elastomeric material mouldings to the boot. Thus, a kicking boot may be formed by securing elastomeric mouldings of appropriate thickness and shape at least to the 'sweet spots' of a dribbling boot.

Clearly the invention may be carried out in a great variety of ways but one particular embodiment thereof will now be described by way of example, with reference to the accompanying drawings in which:-

Figure 1 is a top view of the front portion of a football boot in accordance with the invention;

Figure 2 is a diagrammatic cross-sectional front view taken along the line A-A in Figure 1;

Figure 3 is an inner side view of the football boot of

Figure 1;

Figure 4 is a diagrammatic transverse cross-sectional front view of a side portion of a modified football boot in accordance with the invention;

Figure 5 is a transverse cross-sectional front view of a side portion of another modified football boot in accordance with the invention;

Figure 6(a) is an inner side view of a further football boot in accordance with the invention;

Figure 6(b) is an outer side view of the football boot of Figure 6(a);

Figure 7(a) is an inner side view of a further football boot in accordance with the invention;

Figure 7(b) is an outer side view of the football boot of Figure 7(a);

Figure 7(c) is a top view of the football boot of Figure 7(a); and

Figure 7(d) is a bottom view of the football boot of Figure 7(a);

Referring to Figures 1 to 3, a boot 10, the front portion of which is illustrated in Figure 1, is injection moulded from an elastomeric material comprising styrene and butadiene and comprises a front upper portion 12, a heel portion 13, a sole 14 provided



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with studs 16, and a fastening portion 18 for retaining the boot on the foot of the wearer. The fastening portion 18 consists of two tongues 20 lined with a hook and loop fabric, such as Velcro, at their inner surface to mate with correspondingly sized strips of fabric attached to the boot surface (not shown). However, any type of fastening may be used. The upper portion 12 comprises side walls 22 and integral with the side walls 22 is an upwardly facing ball contact surface 24 of generally concave shape having a generally flattened central portion which extends over substantially the whole of the boot 10. Sweet spots 25, 29 are present on the upper surface 24 (Figure 1) and on each of the side walls 22 (only one side shown in Figure 3), of the boot. This contact surface 24 is generally parallel to the sole in longitudinal section and slightly concave. The flattened central portion is bounded by upper edges 26 at the front and both sides in the form of raised lips, which are supported in the embodiment of Figures 1 to 3, by air and rubber 23.

The embodiments of Figures 4 and 5 have, in addition to an upwardly facing ball contact surface 24, sidewardly facing ball contact surfaces 25 (only one side is shown) which, like the upwardly facing ball contact surface, are of generally concave shape in cross-section. The central portion of the side surface 25 is between the upper side edge 26 and the lower side edge 27, both edges being in the form of raised lips. In Figure 4, the lips 26, 27 are supported by means of respective ribs 26A, 27A but, alternatively, the material of the boot in the region of the raised lips may be thicker than the material of the boot in the region bounded by or between the raised lips.

The ball contact surfaces 24, 25, are textured by being formed with a series of resiliently deformed raised parts (not shown in Figure 1 to 4), which tend to

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grip the ball. In Figure 5 the ball contact surfaces 24, 25 are made up of plurality of parallel extending ribs having a greater height in the region of the lips 26, 27, than in the regions between the lips.

Referring to Figures 6, the boot 30 is shown to have an upper consisting of three main outer surface sections formed on a leather inner sleeve (not shown) which are: a front section 32 formed of rubber injection moulded over the inner sleeve, rear section 34 formed of a lightweight, rigid plastics material which is preferably integral with the sole and an intermediate section 36 formed of a strong fabric to provide flexibility in the middle region of the boot. The front section 32, extending over the front of the wearer's foot, is the same approximate shape as the front upper portion 12 of the boot shown in Figures 1 to 3 but has outer 38 and inner 40 sides which extend rearwardly up to, respectively, just over halfway along the length of the boot (i.e. over the instep) (Figures 6(a)) and just under halfway along the length of the boot (i.e. terminating in the region of the outer toe of the wearer) (Figure 6(b)) so as to cover sweet spots 42 and 44, respectively. Sole 46 is formed of a lightweight, rigid, plastics material, and the rear section 34 is integral with the sole.

The front section is preferably textured as described above with reference to Figures 1 to 3, having formations or projections to grip the ball at least in the areas of the sweet spots.

As before, the thickness of the rubber part of the boot may vary from area to area on the boot so that, for example, in the region of the edge or lip running around the upwardly facing contact surface area, the rubber

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material is considerably thicker than at the sides or over the upwardly facing area. It will be understood that in the case of a boot having an inner leather sleeve, the sleeve is of a generally convex shape, whereas the flat or concave configuration of the upper and side surfaces is obtained by varying the thickness and the structure of the rubber material.

The sides of the boot between the rubber front part and the heel may be covered by fabric as mentioned above with the front edges of the fabric trapped under the edge portions of the moulded rubber part. Alternatively, the leather inner sleeve may be left exposed in these areas and simply coloured as required.

Referring to Figure 7, a boot 48 comprises a front upper portion 50 formed of leather, a heel portion 52 and a sole portion 54 formed of polyurethane, and a conventional fastening portion 56. The sole portion 54 is provided with downwardly extending blade-like projections 55a, 55b which are described in detail in International Patent Publication No. WO91/11929, will not therefore be described further here. The front upper portion 50 comprises side walls 58,60, a top portion 62 and a toe cap portion 64 on which are provided shaped pieces 70,74 and 75, respectively, of elastomeric material comprising styrene and butadiene. The elastomeric pieces 70 on the side walls 58, 60 are in the form of strips or bars which are designed to extend over and around sweet spots 66, 68. The strips 70 extend transversely over the side walls 58,60 and are spaced longitudinally from each other. Intermediate strips 70' extend over part of the top portion 62 and the strips 70" on the inner side wall 58 (Figure 7(a)) closest to the rear end of the boot extend over the fastening portion 56. Where the strips 70 extend over the side walls 58,60 they are formed with one or more

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transverse slits 72 which have the effect of dividing the strips 70 into separately deformable parts. The elastomeric piece 74 provided on the top portion 62 is formed with several rounded raised portions 76 (see Figure 7(c)) which cover sweet spot 78. Although not shown in this boot, an elastomeric piece with formations may also be provided on the heel portion 52. Laces 80 in the fastening portion 56 are shown exposed but they may be hidden by, for example, a length of material to provide a smooth surface in this area.

The embodiment of Figure 7 is particularly advantageous for effecting a lateral kick which is ordinarily executed using the inner side of the boot. In a lateral kick, the ball travels along the inner side region of the boot and its line of travel is interrupted by the elastomeric strips 70 which deform at successive locations along the line, thereby enhancing contact surface area between ball and boot. In this way, it is possible to achieve greater spin on the ball with a lateral kick as well as provide greater distance to such a kick without extra effort on the part of the wearer. Instead of being formed of leather, the areas between the strips 70 may be formed of an elastomeric material to enhance friction between boot and ball further.

By using an elastomeric material for the formations of the ball contact surfaces, energy over and above that provided by a player's return kick is imparted to the ball. When formations are present, energy is stored in the formations when they are deformed by a received ball and is imparted to the ball as the formations reform when the ball is released, thereby assisting in forcing the ball in the direction of the return kick. With certain kinds of kicks, however, the formations may not be deformed. In such cases, a certain amount of energy is still imparted to the ball due to the resilient

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nature of the elastomeric contact surface. Moreover, use of elastomeric material as opposed to leather or like material increases friction between the boot and ball which is unaffected by wet conditions.

The resilient pad described may comprise a plurality of sealed gas or air filled compartments. Such pads may be provided at sweet spots of the boot instead of or in addition to the elastomeric formations described herein.

By having generally flat and/or concave ball contact areas, a player is less likely to execute misplaced kicks with the result that accurate, repeatable kicks can be executed and erratic kicks can be minimized.

When the boot has sidewardly facing ball contacting surfaces as described, the boot is ideally suited for dribbling or juggling a ball and is particularly effective in enabling a player to drag a ball back towards his body using just the sides of the boot. This is because the ball appears to adhere temporarily to the ball contacting surfaces.

With any of the embodiments described, the whole boot may be made from a single material such as rubber in an injection moulding process in which case the boot is both cheaper and simpler to manufacture than conventional football boots which are manufactured from several pieces which must be cut to shape and stitched and glued together. As an alternative to moulding the whole boot, the sole may be moulded separately and may extend over the back upper portion of the boot.

An alternative method of manufacture of the boot described may comprise providing pads of elastomeric material having formations as defined above onto a lining to cover areas which are to become the sweet

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spots of the boot and overmolding a layer of a different elastomeric or a plastic material in such a way that the formations are exposed through the resulting outer layer.

It is possible to effect certain kicks with the boot described that would be impossible with conventional boots.

In use of conventional football boots, the natural swing of the foot and leg sends the ball away from the point of contact. The boot described, however, retains ball contact for longer and therefore allows more power and accuracy for certain types of kick.

It will be appreciated that the actual size and shape of the ball contact surface may differ from that specifically described without departing from the scope of the invention.

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CLAIMS

1. A football boot having an upper formed with a ball contact surface provided with a resilient pad.
2. A boot according to claim 1, wherein the pad is of cellular material including gas or air filled voids.
3. A boot according to claim 1 or claim 2, wherein the pad is formed of an elastomeric material.
4. A boot according to any of the preceding claims, wherein the pad is formed of polyurethane or rubber.
5. A boot according to any of the preceding claims, wherein the pad is provided on the boot at one or more sweet spots.
6. A boot according to any of the preceding claims, wherein the ball contact surface is generally flat and/or concave.
7. A boot according to any of the preceding claims, wherein the ball contact surface is provided with a plurality of formations formed of an elastomeric material.
8. A boot according to claim 7, wherein the ball contact surface and/or formations are deformable upon contact with a ball.
9. A boot according to any of the preceding claims, wherein the material of the ball contact surface is relatively thin in comparison with a boundary region of relatively thicker material.

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10. A boot according to claim 9, wherein the radius of curvature in transverse cross section of the thicker region is smaller than the radius of curvature of the region between the thicker regions.

11. A boot according to claim 7, wherein the formations are resiliently deformable and assist in the re-direction of the ball.

12. A boot according to any of the preceding claims, comprising an upwardly facing ball contact surface provided at the top of the boot upper which is generally parallel to the sole of the boot.

13. A boot according to any of the preceding claims, comprising a sidewardly facing ball contact surface provided at the side of the boot upper which is generally perpendicular to the sole of the boot.

14. A boot according to claim 12, wherein the upwardly facing ball contact surface is bounded by a comparatively less yielding upper edge.

15. A boot according to claim 14, wherein the edge is generally U-shaped.

16. A boot according to any of the preceding claims, wherein the elastomeric material comprises styrene-butadiene, polyurethanes and/or rubbers.

17. A boot according to any of claims 7 to 16, wherein the ball contact surface is provided with gaps at selected regions where formations are absent.

18. A boot according to any of claims 7 to 17, wherein the formations take the shape of projections having sharp edges that can bite into the ball.



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19. A boot according to any of the preceding claims, comprising a sole portion having a plurality of blade-like projections extending downwardly from the sole portion which are arranged to provide increased grip for the foot of a wearer during turning movement by extending substantially normal to the direction of pushing force on the projection during such turning movement.

20. A kit for modifying a conventional football boot, comprising a moulding having a ball contact surface as defined in any one of the preceding claims, and means for securing the moulding to the upper of a football boot.

21. A method of manufacturing a football boot, comprising moulding an elastomeric material to form a resilient ball contact surface.

22. A method according to claim 21, wherein the elastomeric material is moulded by injection.

23. A method according to claim 21 or claim 22, wherein the elastomeric material is moulded on to a lining.

24. A method according to claim 23, wherein the lining is of leather or a like porous material.

25. A method according to any of claims 21 to 24, wherein the moulding operation is carried out in at least two stages for forming different parts of the boot.

26. A method according to claim 25, wherein the sole and heel portions of the boot are formed in one stage and the front and side portions of the boot are formed in another stage.

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27. A method according to any of claims 21 to 26,  
wherein a resilient pad is provided on a sweet spot of  
the boot during the moulding operation.

FIG. 1

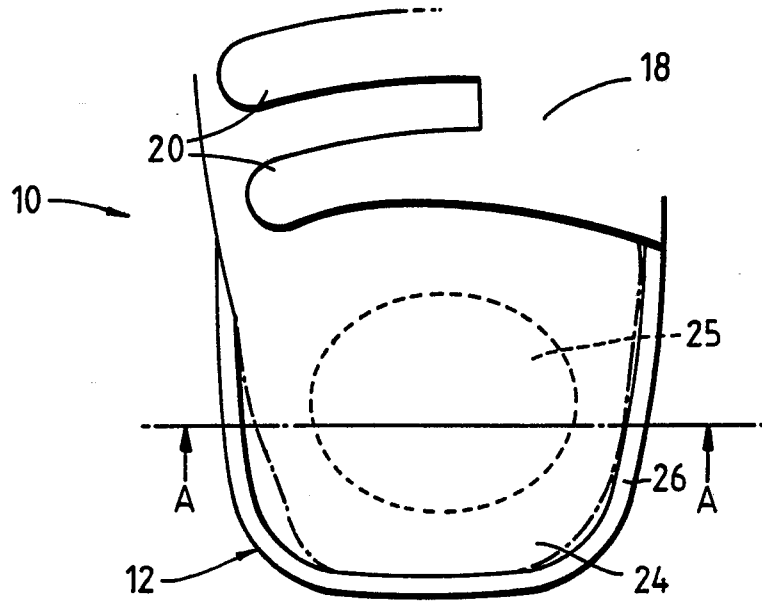


FIG. 2

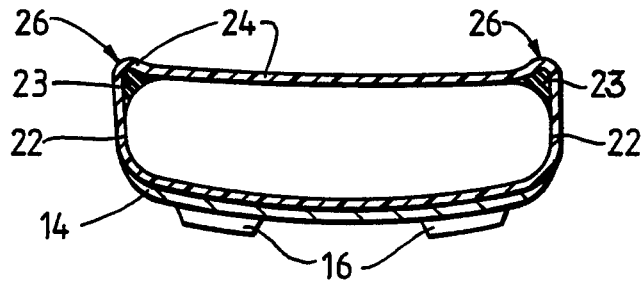
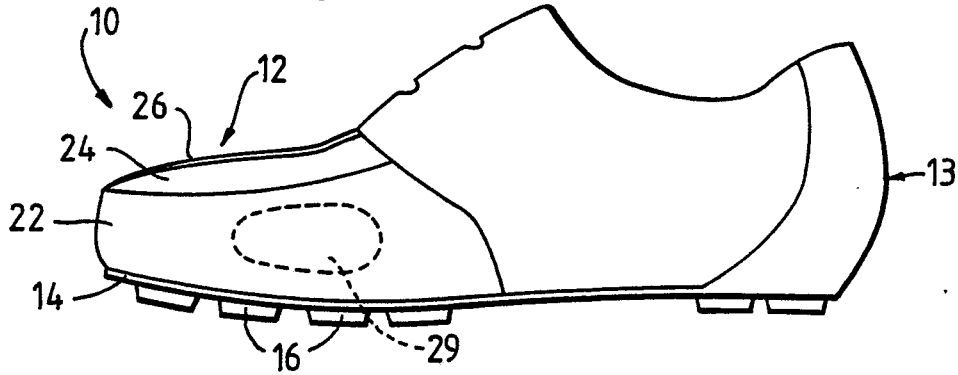


FIG. 3



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FIG. 4

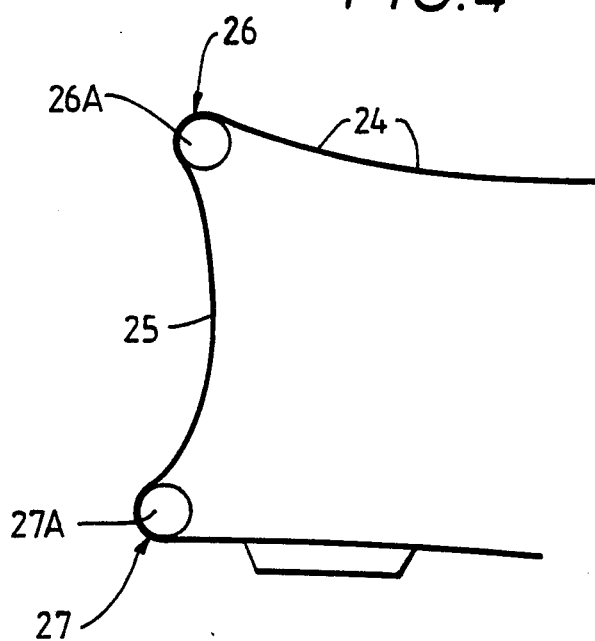


FIG. 5

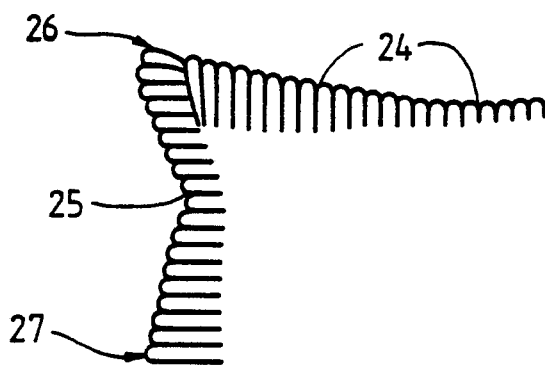


FIG.6(a)

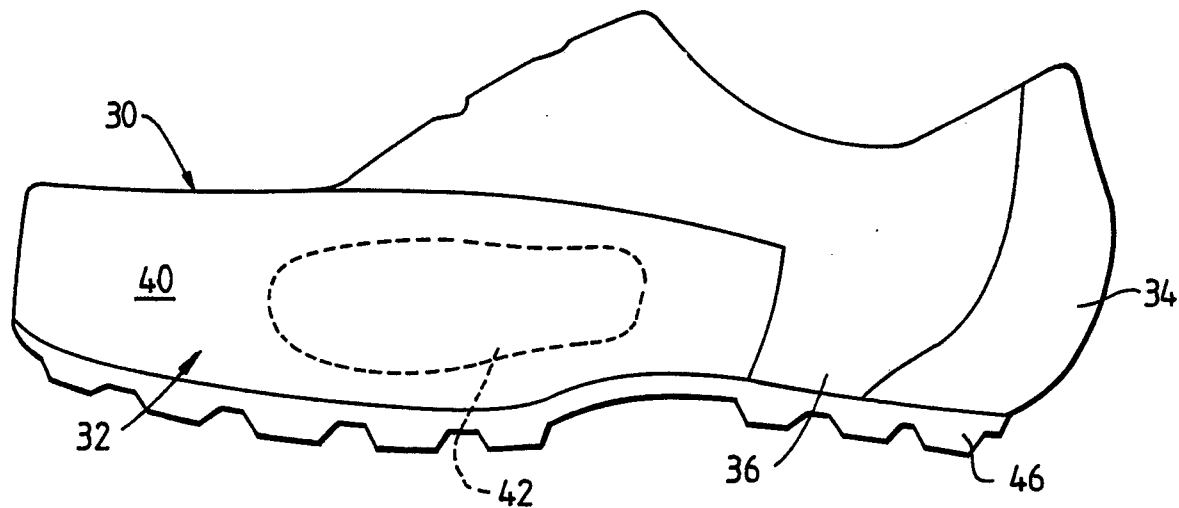
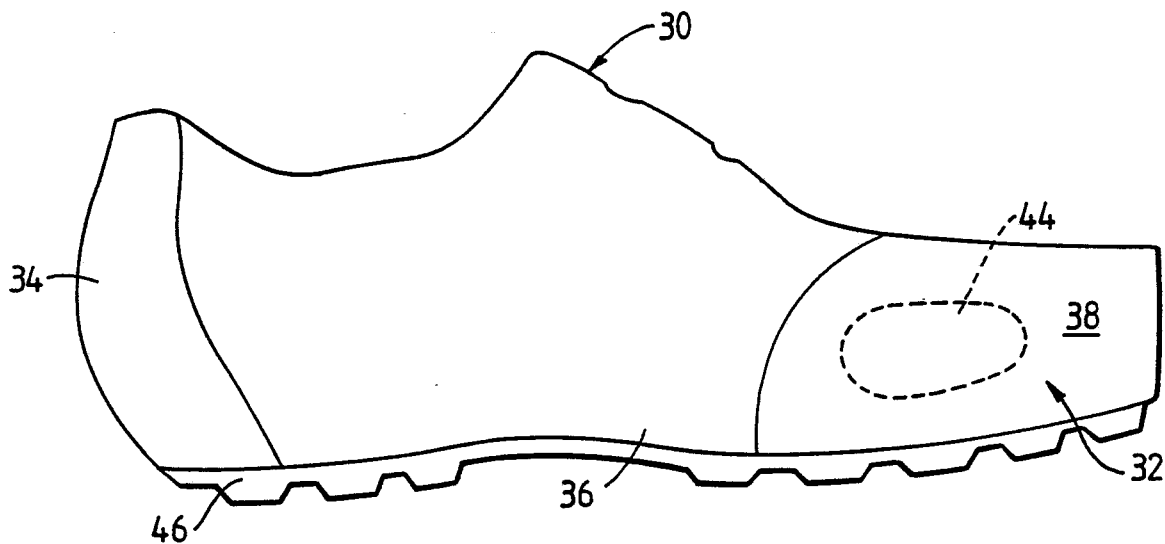


FIG.6(b)



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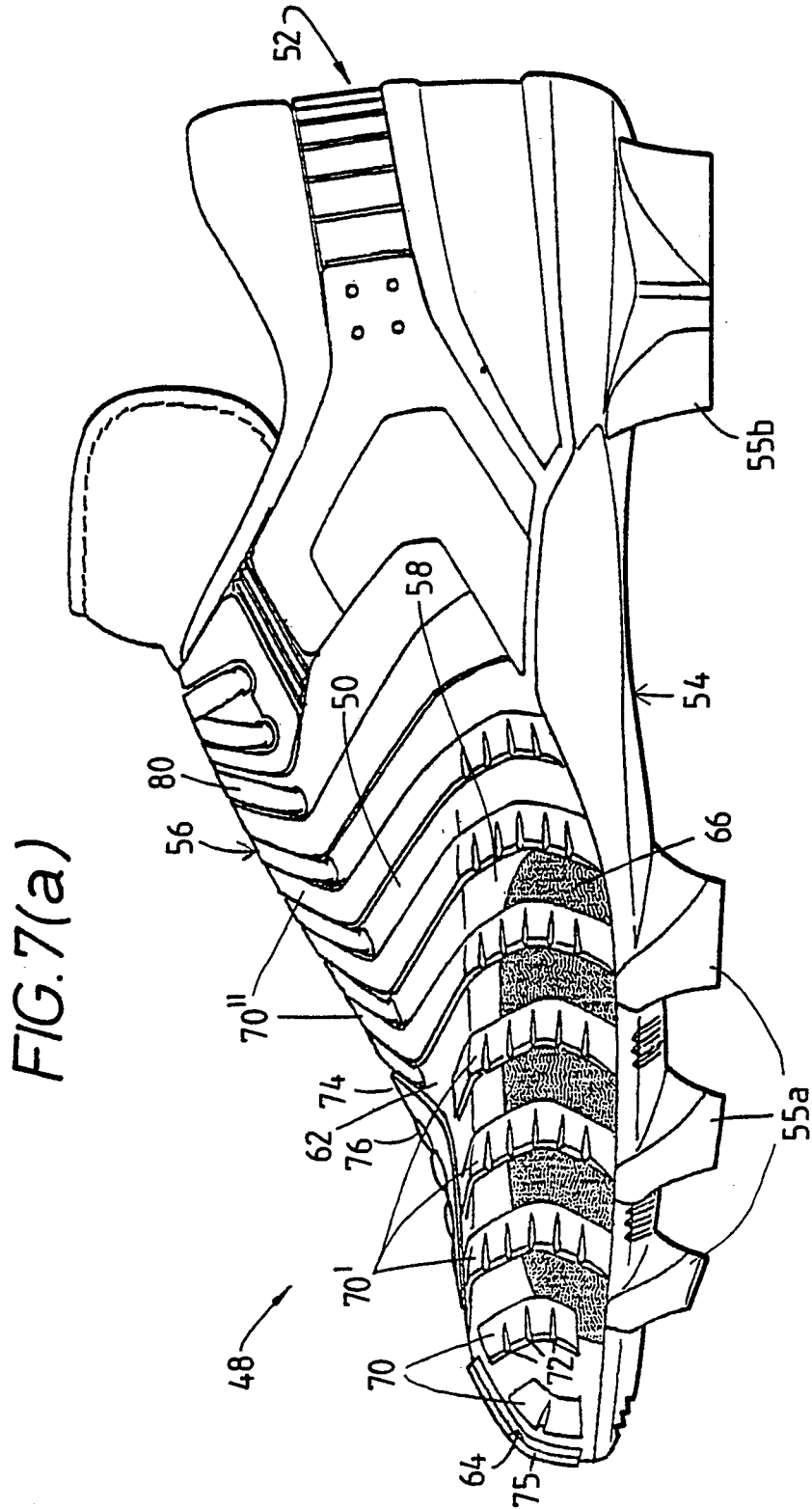
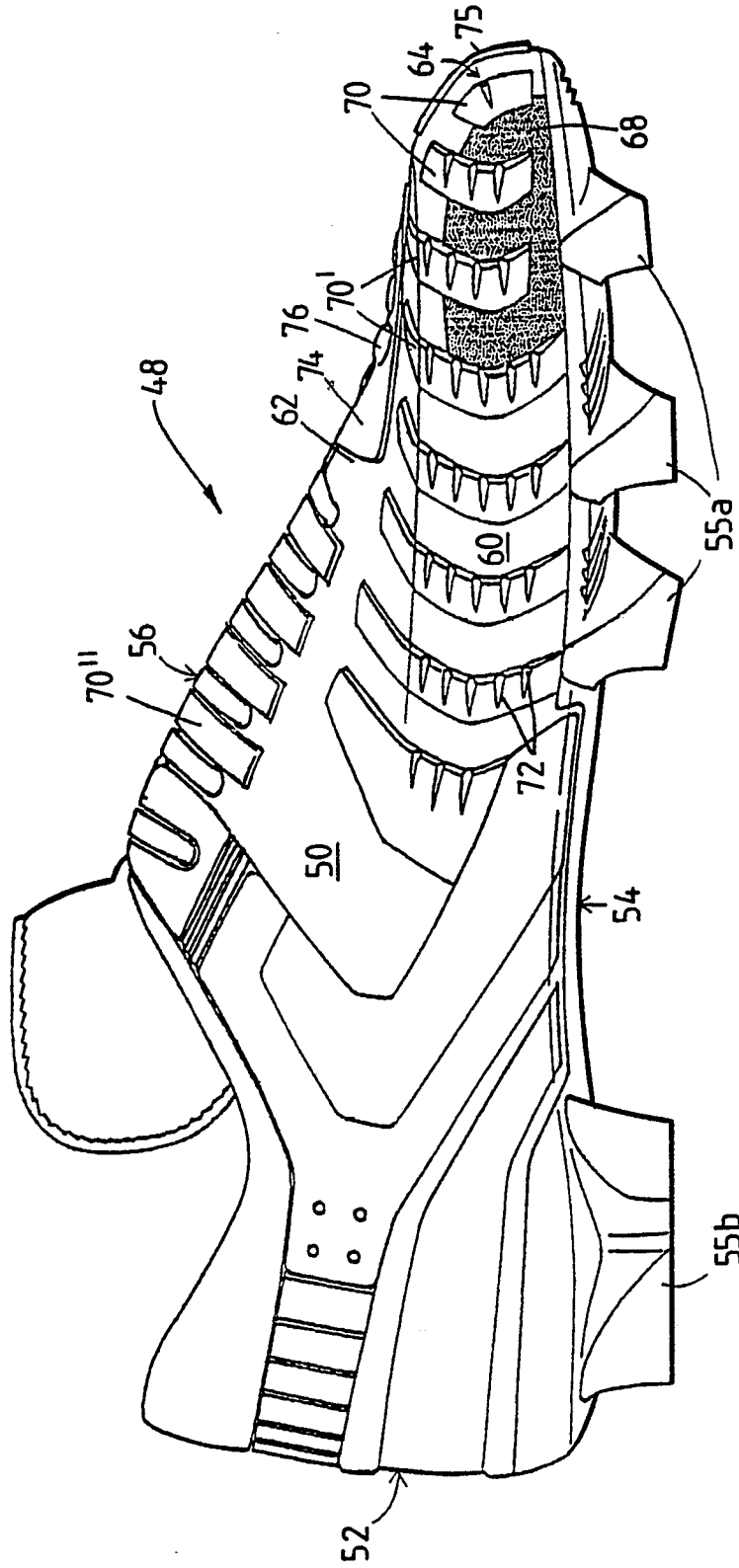


FIG. 7(a)

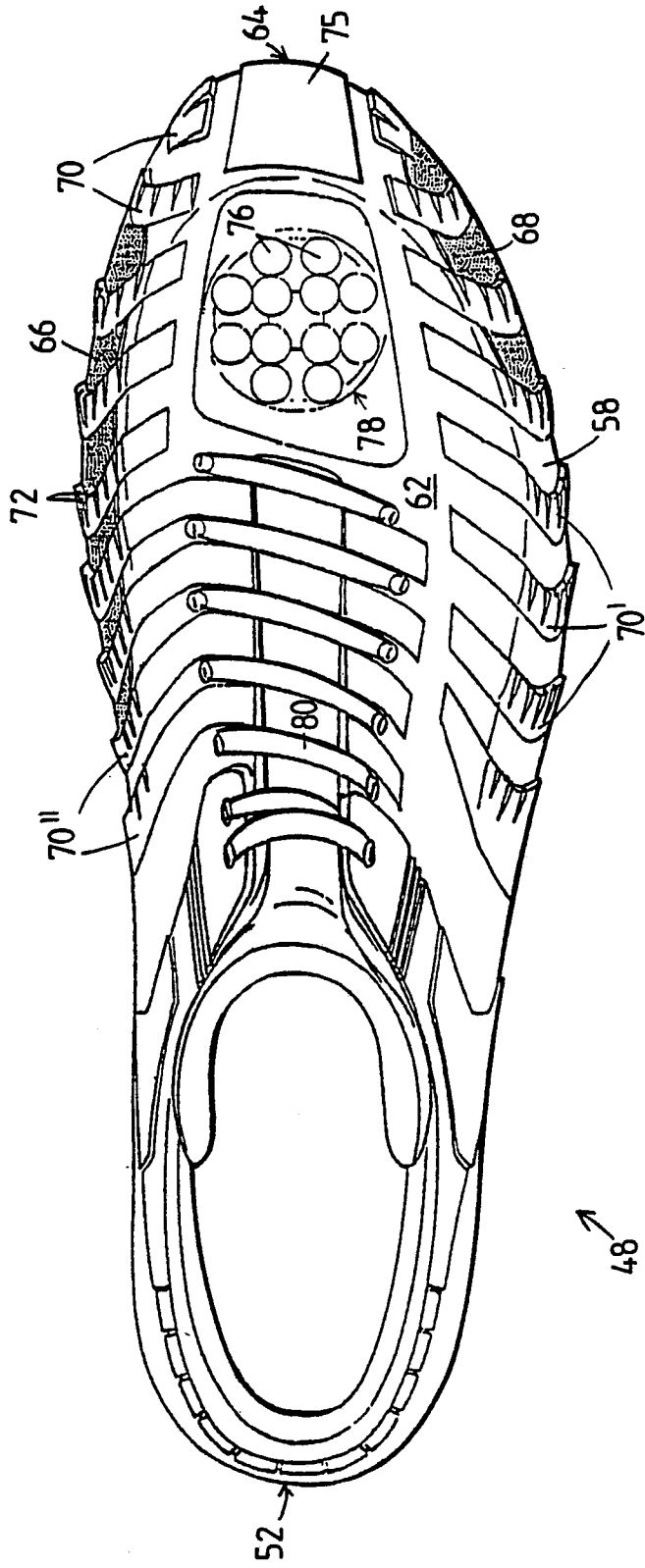
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FIG. 7(b)



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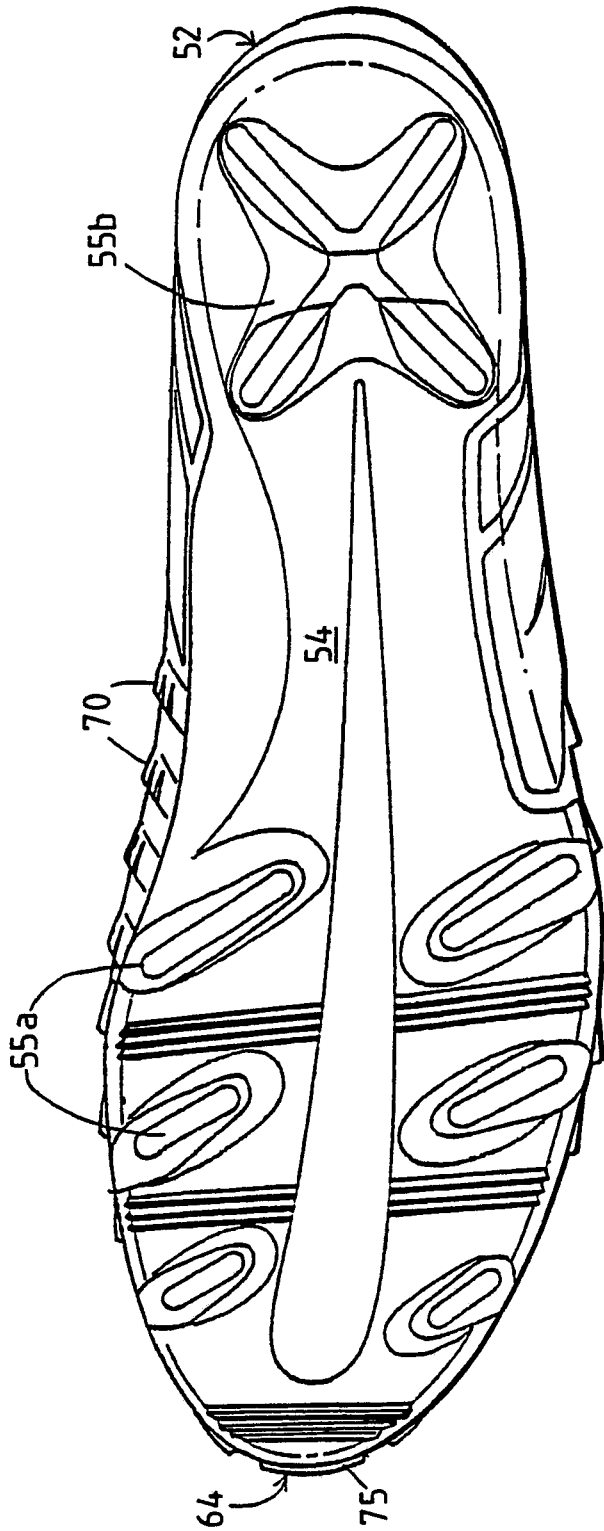
FIG. 7(c)





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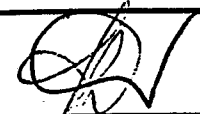
FIG. 7(d)



**INTERNATIONAL SEARCH REPORT**

PCT/GB 91/02134

International Application No

<b>I. CLASSIFICATION OF SUBJECT MATTER</b> (if several classification symbols apply, indicate all) <sup>6</sup>		
According to International Patent Classification (IPC) or to both National Classification and IPC		
Int.Cl. 5 A43B5/02		
<b>II. FIELDS SEARCHED</b>		
Minimum Documentation Searched <sup>7</sup>		
Classification System	Classification Symbols	
Int.Cl. 5	A43B	
Documentation Searched other than Minimum Documentation to the Extent that such Documents are Included in the Fields Searched <sup>8</sup>		
<b>III. DOCUMENTS CONSIDERED TO BE RELEVANT<sup>9</sup></b>		
Category <sup>10</sup>	Citation of Document, <sup>11</sup> with indication, where appropriate, of the relevant passages <sup>12</sup>	Relevant to Claim No. <sup>13</sup>
X	DE,A,2 743 666 (D. DEKANIC) 30 July 1978  see the whole document ---	1,3-7, 11,13, 16,18, 20-23,27
X	DE,U,1 805 045 (A. DIHLMANN) 28 January 1960  see the whole document ---	1,3-6, 13,16, 20,21
X	GB,A,2 230 174 (A. RUSSELL) 17 October 1990 see the whole document ---	1,3-6,13
X	GB,A,2 018 570 (J. DANKS) 24 October 1979 see the whole document ---	1,3,4,5
X	US,A,3 525 165 (R. RANDALL) 25 August 1970 ---	20
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**ANNEX TO THE INTERNATIONAL SEARCH REPORT  
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DE-A-2743666	30-03-78	FR-A- 2365972 SE-A- 7610768	28-04-78 30-03-78
DE-U-1805045		None	
GB-A-2230174	17-10-90	None	
GB-A-2018570	24-10-79	None	
US-A-3525165	25-08-70	None	

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