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Fahrradschuh

Chaussure de cyclisme

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(56) References cited:  
**EP-A- 0 682 960** **DE-A- 3 519 634**  
**DE-U- 9 213 747** **DE-U- 9 215 048**  
**FR-A- 616 307** **FR-A- 2 413 053**

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## Description

### BACKGROUND OF THE INVENTION

**[0001]** The present invention is directed to cycling shoes and, more particularly, to a cycling shoe which protects the rider's anklebone during cycling. Use of anklebone protection in non-cycling shoes is shown in EP 0, 682, 960 A, for example.

**[0002]** The sole that supports the arch in a cycling shoe for driving the pedal of a bicycle is molded hard in order to impart rigidity to the shoe. More specifically, a plastic with high rigidity is used for this sole, and it is molded in a thick layer. Some cycling shoes are equipped with a cylindrical leg component that is part of the upper and that envelops the ankle. The upper is designed such that it will not move when subjected to the force of either pedalling down or lifting.

**[0003]** The anklebone, which sticks out of and makes up part of the ankle, can come into contact with part of the crank, with the brakes, or the like during crank drive, in which the pedal is depressed and lifted. This contact of the anklebone on the side of the ankle, which inclines relatively sharply in the fore and aft direction with respect to the shoe sole, makes pedal depression difficult, and is also a cause of soiled socks.

### SUMMARY OF THE INVENTION

**[0004]** The present invention is directed to a cycling shoe that protects the rider's anklebone during cycling. A shoe constructed according to the present invention also maintains the positional relationship between the anklebone and the anklebone protector during riding, and the high-cut component of the shoe which contains the anklebone cover can be easily inclined relative to the sole so as not to impede pedaling.

**[0005]** In one embodiment of the present invention, a cycling shoe includes a sole, a high-cut component coupled to the sole for enveloping an ankle, and a separate anklebone cover fastened to the high-cut component. The high-cut component is formed of a stretchable material, and the high-cut component includes overlapping portions removably attached to each other. As a result, the high-cut component can be easily inclined relative to the sole so as not to impede pedaling.

### BRIEF DESCRIPTION OF THE DRAWINGS

#### [0006]

Figure 1 is a side view of a particular embodiment of a cycling shoe according to the present invention; Figure 2 is a top view of the cycling shoe shown in Figure 1; Figure 3 is an opposite side view of the cycling shoe shown in Figure 1; Figure 4 is a side view of the cycling shoe shown in

Figure 1 without the facing material;

Figure 5 is a top view of the cycling shoe shown in Figure 4;

Figure 6 is an opposite side view of the cycling shoe shown in Figure 4;

Figure 7 is a detailed view of a particular embodiment of an anklebone cover according to the present invention;

Figure 8 is a side view of a particular embodiment of a high-cut component used in the cycling shoe shown in Figure 1; and

Figure 9 is an opposite side view of the high-cut component shown in Figure 8.

### 15 DETAILED DESCRIPTION OF THE EMBODIMENTS

**[0007]** Figure 1 is a side view of a particular embodiment of a cycling shoe 1 according to the present invention. Figure 1 shows the inner side of the cycling shoe, that is, the side that is opposite the other leg or the crank. The cycling shoe 1 is made up of a sole component 2, a toe component 3, a heel component 4, a high-cut component 5 (which is a cylindrical leg component), and an upper component 6 that extends from the high-cut component 5 to the toe component 3. Side components 7 that rise up on both sides integrally with the sole component 2 are provided to both sides of the sole component 2. The side components 7 are made up of a rear portion 8 that is close to the heel component 4, and a shoe tightening component 9 that faces upward diagonally in the center. An anklebone cover 11 that protects the anklebone is provided integrally to the inner side of the side components 7.

**[0008]** As shown in Figure 3, an outer side component 7 is also provided on the side opposite the side that faces the crank. A rear portion 8 that is close to the heel component 4 is also formed on the outer side component 7. The outer side component 7 is provided with a narrow riser component 12 that rises up to the high-cut component 5. The riser component 12 serves to keep out dust. The rear portion of the riser component 12 is connected to a band component 13 that wraps around the heel component 4 to the opposite side.

**[0009]** The anklebone cover 11 is fastened to the back surface of the inner rear portion 8 and to the shoe tightening component 9. As shown in Figure 7, the anklebone cover 11 is formed from a protective portion 16 that protects the anklebone directly, and a lower portion 17 that is contiguous with the protective portion 16 and continues downward. The lower portion 17 is formed from a lower portion diagonal portion 18 that extends diagonally upward from the lower center toward the upper component, and a lower portion rear portion 19 that extends from the center toward the heel component 4.

**[0010]** The protective portion 16 is formed in a roughly circular shape. Of course, this "circular shape" also encompasses an ellipse. A textured pattern 21 appears on the surface of the protective portion 16. The periphery,

at least the upper semicircle, of the protective portion 16 is formed as a fastened portion 22. The imaginary line 23 that traces the outer edges of the anklebone cover 11 indicates a stitching line made on a sewing machine. As shown in Figure 1, the anklebone cover 11 is fastened to the heel component 4, the high-cut component 5, the rear portion 8, and the shoe tightening component 9. Any commonly used means can be employed for this fastening, such as stitching.

[0011] Figures 4, 5, and 6 show a state in which the high-cut component 5, the facing portion, and the decorative portion have been removed from the completed product shown in Figures 1, 2, and 3. Figure 4 shows a state in which the anklebone cover 11 has been fastened to the rear portion 8 and the shoe tightening component 9. In Figure 5, the cleat is hidden from view by the upper member of the sole.

[0012] As shown in Figure 4, a holder ring 25 is fitted into a pouch formed at the distal end of the shoe tightening component 9. As shown in Figure 3, the leading end of a tightening strap 26 is fastened to the rear portion 8 on the outside. The other end of the tightening strap 26 is passed through and folded back over the holder ring 25. A surface-attachment fastener is fastened to the two opposing surfaces at the overlapping portions above and below where the strap is folded back, and as shown in Figures 1 and 3, the upper component 6 and the side components 7 on both sides are tightened by the tightening strap 26.

[0013] Figures 8 and 9 show the high-cut component 5, which is the leg component. The high-cut component 5 is made from a stretchable material such as Neoprene®. As shown in Figure 8, the cylindrical high-cut component 5 is not fastened in a closed state. Instead, the high-cut component 5 overlaps inside and outside in an openable fashion. The upper end of the overlapped part of the high-cut component 5 is bordered on the outer surface with a surface-attachment fastener 31. The surface-attachment fastener 31, which goes all the way around and overlaps, allows the overlapping portion 32 that overlaps on the inside and outside to be joined together. Figure 2 shows how the overlapping portion 32 overlaps. The lower end of the high-cut component 5, which goes all the way around, is fastened to the band component 13 and the riser component 12. As shown in Figure 2, the overlapping portion 32 is on the outside and at the front. "At the front" here encompasses the meaning of "toward the front."

[0014] As shown in Figure 5, a split component 35 that is closed at the front end is provided to the upper component 6. The rear end of the split component 35 is connected to a cylindrical hole 36 formed by the heel component 4, the rear end of the upper component 6, the riser component 12, the side components 7, and so on.

[0015] The effect of this embodiment will now be described. Although not shown in the figures, a cleat fixed to the shoe 1 is linked to the pedal of a bicycle. When the upper component 6 and the side components 7 on

both sides are tightened with the shoe tightening component 9, the foot and the cycling shoe 1 are fixed together, and the drive force that depresses and lifts the pedal is imparted to the pedal by the foot.

[0016] The sole component 2 remains roughly horizontal throughout its rotational movement, but the ankle inclines with respect to the sole component 2. In the high-cut component 5, which moves integrally with the foot and is subjected to an inclining force, the split component 35 shown in Figure 5 reduces the resistance coming from the upper component 6. Also, since the high-cut component 5 has elastic joining strength of the overlapping portion 32, it is readily deformed from its cylindrical shape and readily inclines integrally with the foot.

[0017] The protective portion 16 of the anklebone cover 11 moves back and forth integrally with the high-cut component 5, which inclines integrally with the foot. This integral back and forth movement maintains a steady positional relationship between the anklebone and the protective portion 16, that is, the positional relationship in the longitudinal direction. As a result, the anklebone never comes out of the protective portion 16. The protective portion 16 has a small surface area, but it is fastened to the high-cut component 5 by a long circumference component, and the fastening strength is high. The lower portion 17 of the anklebone cover 11 is firmly fastened to the side components 7. As a result, the fastening strength of the protective portion 16 lasts a long time.

[0018] While the above is a description of various embodiments of the present invention, further modifications may be employed without departing from the spirit and scope of the present invention. Thus, the scope of the invention should not be limited by the specific structures disclosed. Instead, the true scope of the invention should be determined by the following claims. Of course, although labeling symbols are used in the claims in order to facilitate reference to the figures, the present invention is not intended to be limited to the constructions in the appended figures by such labeling.

## Claims

1. A cycling shoe comprising:

a sole (2) ;  
a high-cut component (5) coupled to the sole (2) for enveloping an ankle; and a separate anklebone cover (11) fastened to the high-cut component (5),  
wherein the high-cut component (5) is formed of a stretchable material and

characterised in that the high-cut component (5) includes overlapping portions (32) removably attached to each other.

2. The cycling shoe according to Claim 1 further comprising a side component (7) contiguous with the sole (2) and extending upwardly from the sole (2), and wherein the anklebone cover (11) includes:

a protective portion (16) for protecting the anklebone, wherein the protective portion (16) is fastened to the high-cut component (5);  
a lower portion (17) contiguous with the protective portion (16) and extending downwardly; and  
wherein the lower portion (17) is contiguously fastened to the side component (7).

3. The cycling shoe according to Claim 2 wherein the side component (7) includes:

a rear component (8) contiguous with the sole (2) and extending upwardly from the sole (2);  
a shoe tightening component (9) contiguous with the sole (2) and extending upwardly from the sole (2) toward a top of the shoe; and  
wherein the lower portion (17) of the anklebone cover (11) is contiguously fastened to the rear component (8) and to the shoe tightening component (9).

4. The cycling shoe according to any preceding claim wherein the anklebone cover (11) has a substantially circular shape.

5. The cycling shoe according to Claim 4 wherein at least an upper semicircular portion of the anklebone cover (11) is fastened directly to the high-cut component (5).

6. The cycling shoe according to any of Claims 1 to 3 wherein the anklebone cover (11) has a substantially elliptical shape.

7. The cycling shoe according to any preceding claim wherein the anklebone cover (11) is formed from a resin elastomer.

8. The cycling shoe according to any preceding claim wherein the anklebone cover (11) is stitched to the high-cut component (5).

9. The cycling shoe according to Claim 2 or any claim dependent thereon wherein the protective portion (16) is contiguously fastened to the high-cut component (5).

#### Patentansprüche

1. Fahrradschuh, umfassend:

eine Sohle (2);  
eine hochgezogene Komponente (5), die mit der Sohle (2) verbunden ist, um ein Knöchelgelenk einzuhüllen; und eine separate Knöchelabdeckung (11), die an der hochgezogenen Komponente (5) befestigt ist;

wobei die hochgezogene Komponente (5) aus einem dehnbaren Material ausgebildet ist, und **dadurch gekennzeichnet, dass** die hochgezogene Komponente (5) sich überlappende Abschnitte (32) enthält, die entfernbar aneinander angebracht sind.

2. Fahrradschuh nach Anspruch 1, weiter umfassend eine Seitenkomponente (7), die sich an die Sohle (2) anschließt und sich von der Sohle (2) aus nach oben erstreckt, und wobei die Knöchelabdeckung (11) folgendes enthält:

einen Schutzabschnitt (16) zum Schützen des Knöchels, wobei der Schutzabschnitt (16) an der hochgezogenen Komponente (5) befestigt ist;  
einen unteren Abschnitt (17), der sich an den Schutzabschnitt (16) anschließt und sich nach unten erstreckt; und

wobei der untere Abschnitt (17) sich an die Seitenkomponente (7) anschließend befestigt ist.

3. Fahrradschuh nach Anspruch 2, bei dem die Seitenkomponente (7) folgendes enthält:

eine hintere Komponente (8), die sich an die Sohle (2) anschließt und sich von der Sohle (2) aus nach oben erstreckt;  
eine Schuhfestziehkomponente (9), die sich an die Sohle (2) anschließt und sich von der Sohle (2) aus nach oben zum Oberteil des Schuhs erstreckt; und

wobei der untere Abschnitt (17) der Knöchelabdeckung (11) sich an die hintere Komponente (8) und an die Schuhfestziehkomponente (9) anschließend befestigt ist.

4. Fahrradschuh nach einem der vorherigen Ansprüche, bei dem die Knöchelabdeckung (11) eine im Wesentlichen kreisförmige Form aufweist.

5. Fahrradschuh nach Anspruch 4, bei dem wenigstens ein oberer halbkreisförmiger Abschnitt der Knöchelabdeckung (11) direkt an der hochgezogenen Komponente (5) befestigt ist.

6. Fahrradschuh nach einem der Ansprüche 1 bis 3, bei dem die Knöchelabdeckung (11) eine im We-

sentlichen elliptische Form aufweist.

7. Fahrradschuh nach einem der vorherigen Ansprüche, bei dem die Knöchelabdeckung (11) aus einem Harzelastomer gebildet ist. 5
8. Fahrradschuh nach einem der vorherigen Ansprüche, bei dem die Knöchelabdeckung (11) an die hochgezogene Komponente (5) angenäht ist. 10
9. Fahrradschuh nach Anspruch 2 oder jedem hiervon abhängigen Anspruch, bei dem der Schutzabschnitt (16) an die hochgezogene Komponente (5) anschließend befestigt ist. 15

## Revendications

1. Une chaussure de cyclisme comprenant :

une semelle (2) ;  
un composant échancré (5) associé à la semelle (2) pour envelopper une cheville ; et un revêtement séparé de l'os de la cheville (11) fixé au composant échancré (5),  
dans laquelle le composant échancré (5) est composé d'une matière extensible et

**caractérisée en ce que** le composant échancré (5) comprend des parties se chevauchant (32) fixées de manière amovible les unes aux autres. 30

2. La chaussure de cyclisme selon la revendication 1, comprenant en outre un composant latéral (7) contigu avec la semelle (2) et s'étendant vers le haut à partir de la semelle (2), et dans laquelle le revêtement de l'os de la cheville (11) comprend :

une partie protectrice (16) pour protéger l'os de la cheville, dans laquelle la partie protectrice (16) est fixée au composant échancré (5) ;  
une partie inférieure (17) contiguë avec la partie protectrice (16) et s'étendant vers le bas ; et  
dans laquelle la partie inférieure (17) est fixée de manière contiguë au composant latéral (7). 45

3. La chaussure de cyclisme selon la revendication 2, dans laquelle le composant latéral (7) comprend :

un composant arrière (8) contigu avec la semelle (2) et s'étendant vers le haut à partir de la semelle (2) ;  
un composant de serrage de la chaussure (9) contigu avec la semelle (2) et s'étendant vers le haut à partir de la semelle (2) en direction du dessus de la chaussure ; et  
dans laquelle la partie inférieure (17) du revêtement de l'os de la cheville (11) est fixée de

manière contiguë au composant arrière (8) et au composant de serrage de la chaussure (9).

4. La chaussure de cyclisme selon l'une quelconque des revendications précédentes, dans laquelle le revêtement de l'os de la cheville (11) présente une forme sensiblement circulaire.

5. La chaussure de cyclisme selon la revendication 4, dans laquelle au moins une partie semi-circulaire supérieure du revêtement de l'os de la cheville (11) est directement fixée au composant échancré (5).

6. La chaussure de cyclisme selon l'une quelconque des revendications 1 à 3, dans laquelle le revêtement de l'os de la cheville (11) présente une forme sensiblement elliptique.

7. La chaussure de cyclisme selon l'une quelconque des revendications précédentes, dans laquelle le revêtement de l'os de la cheville (11) est composé d'élastomère résine. 20

8. La chaussure de cyclisme selon l'une quelconque des revendications précédentes, dans laquelle le revêtement de l'os de la cheville (11) est cousu au composant échancré (5). 25

9. La chaussure de cyclisme selon la revendication 2 ou l'une quelconque des revendications dépendantes, dans laquelle la partie protectrice (16) est fixée de manière contiguë au composant échancré (5).

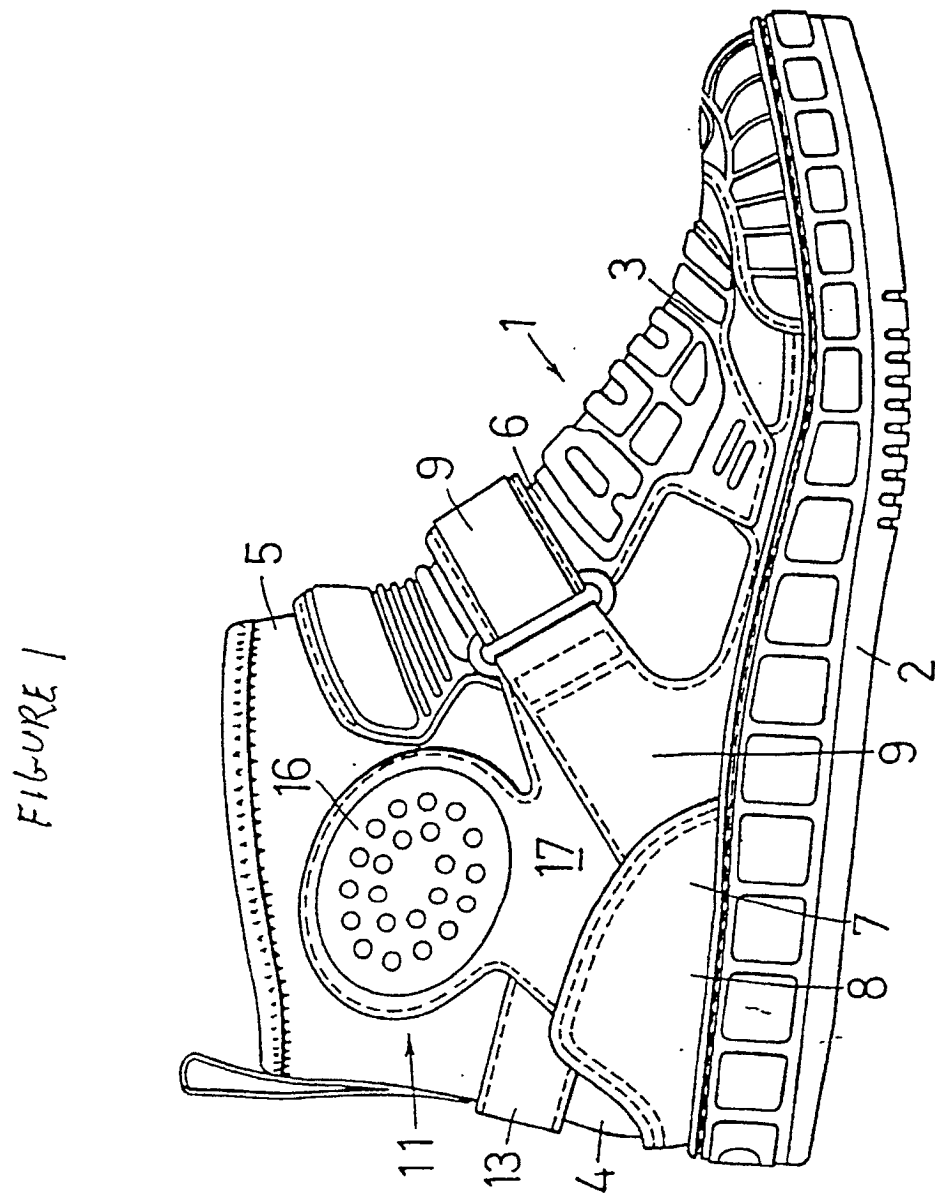
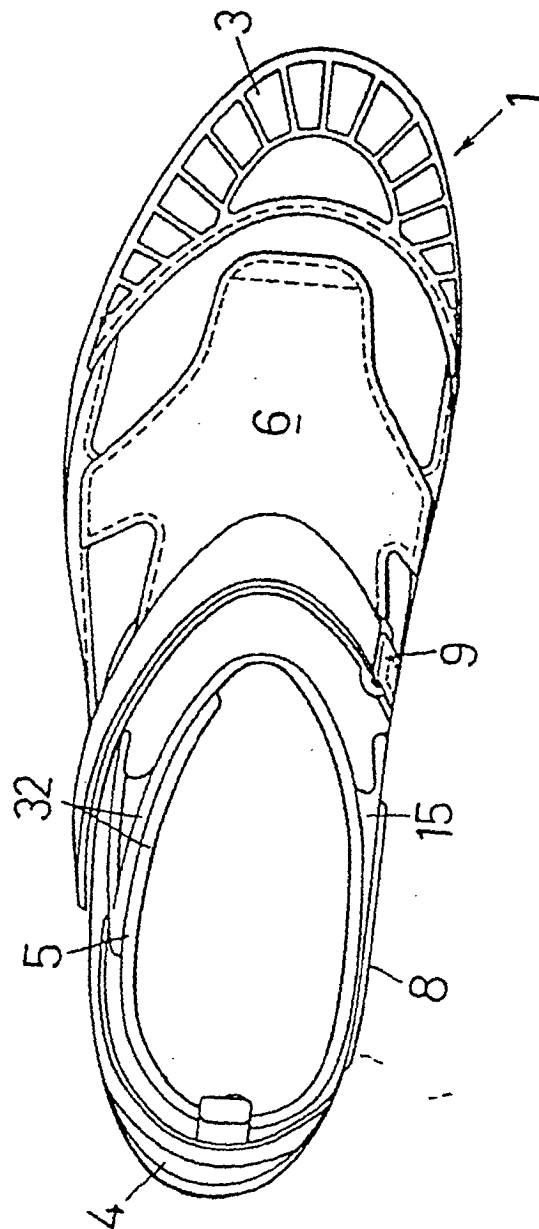


FIGURE 2



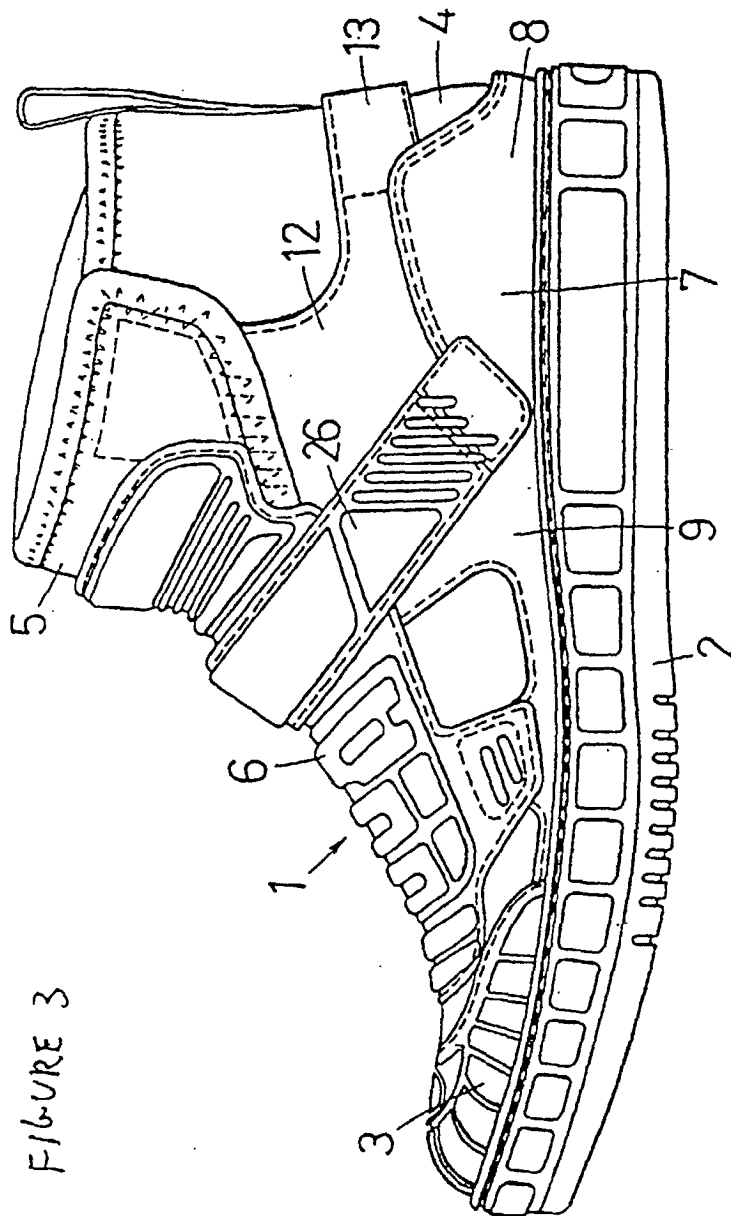


FIGURE 3



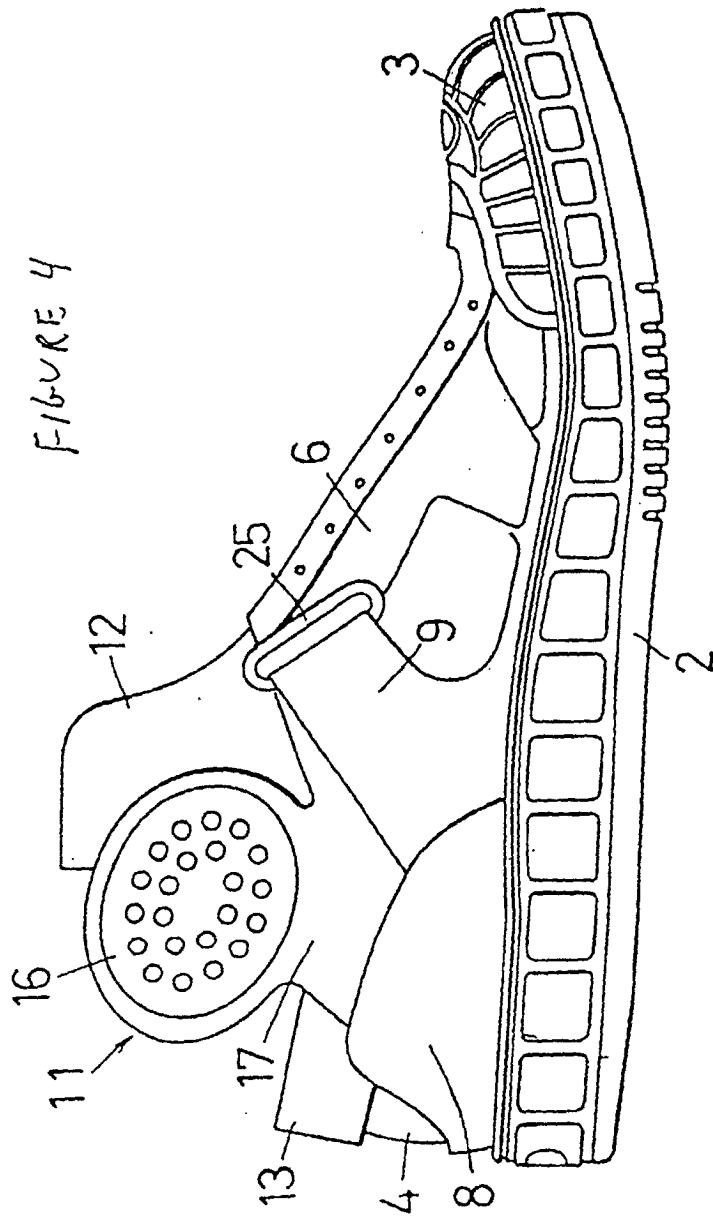


FIGURE 5

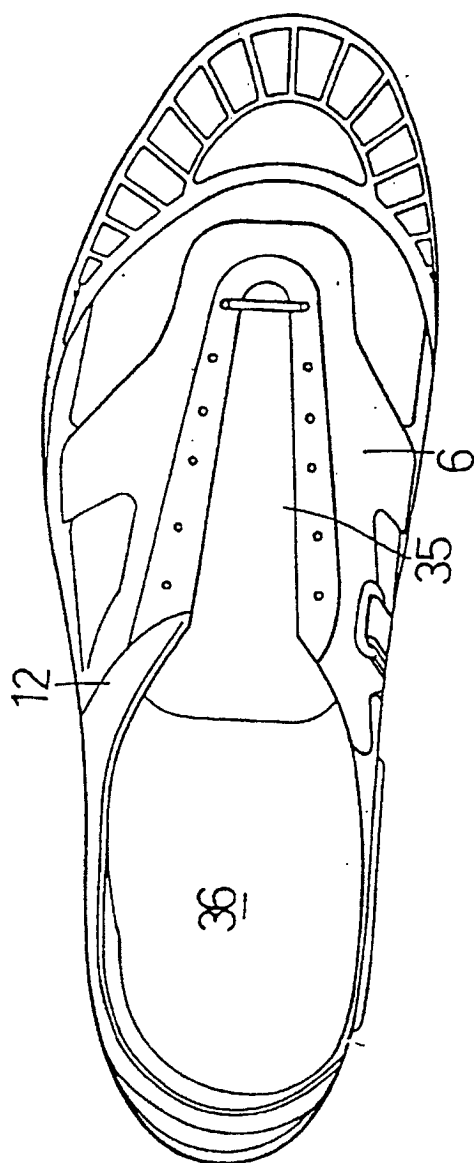
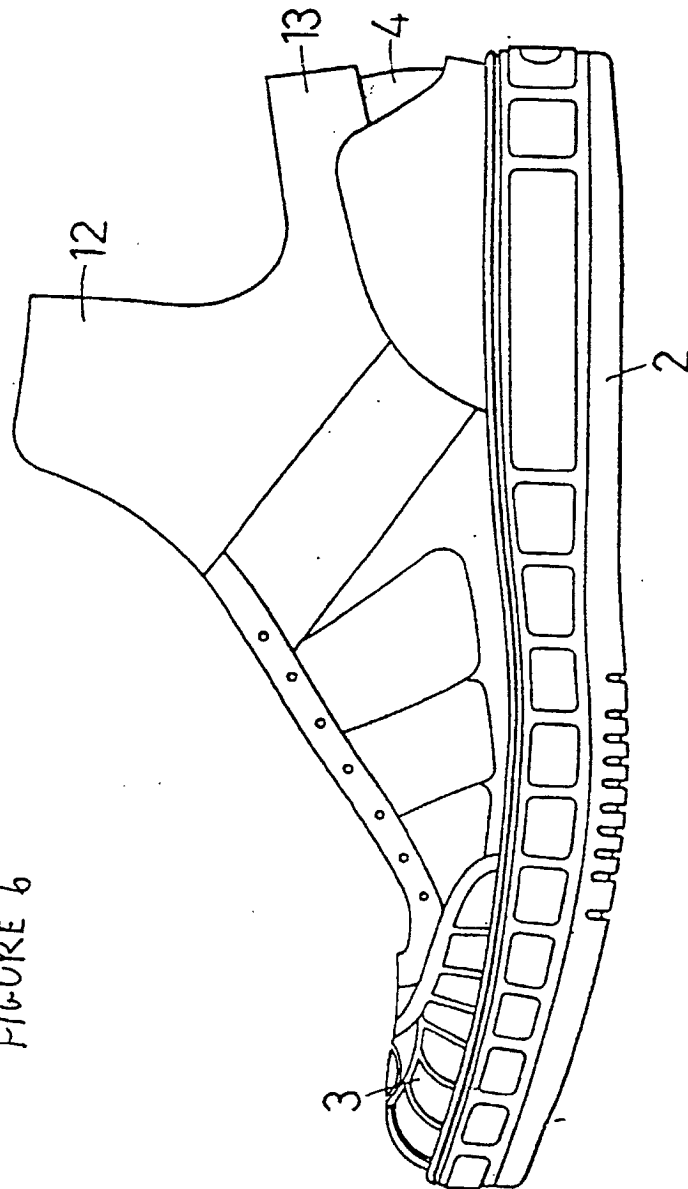


FIGURE 6



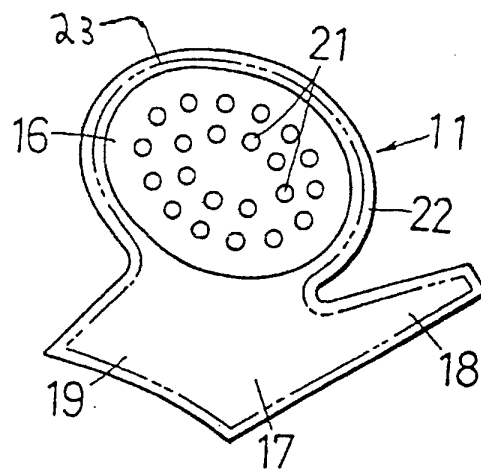


FIGURE 7

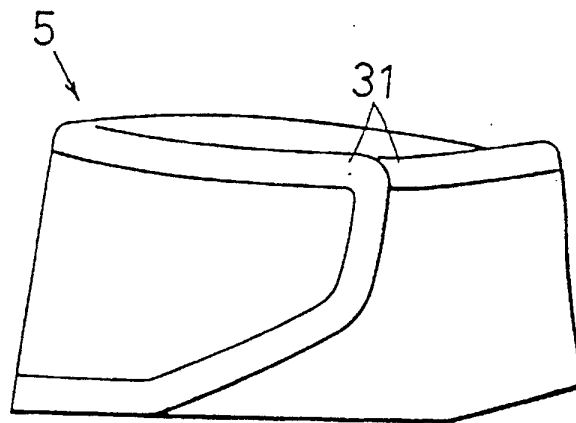


FIGURE 8

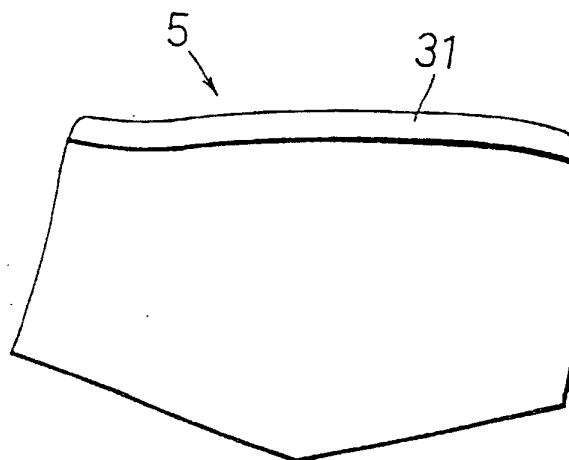


FIGURE 9