(19) Europäisches Patentamt
European Patent Office
Office européen des brevets

(11) Publication number: **0 152 783**
B1

(12) # EUROPEAN PATENT SPECIFICATION

(45) Date of publication of patent specification: **07.09.88**

(51) Int. Cl.[4]: **A 43 B 5/00**

(21) Application number: **85100632.0**

(22) Date of filing: **23.01.85**

(54) **Insole with integral toe puff and heel counter.**

(30) Priority: **02.02.84 IT 3062684 u**

(43) Date of publication of application:
28.08.85 Bulletin 85/35

(45) Publication of the grant of the patent:
07.09.88 Bulletin 88/36

(84) Designated Contracting States:
AT CH DE FR LI SE

(56) References cited:
BE-A- 384 248
BE-A- 384 249
FR-A-2 119 653

(73) Proprietor: **ASOLO S.p.A.**
Via Papa Luciani 2
I-31020 Colbertaldo di Vidor (Treviso) (IT)

(72) Inventor: **Tanzi, Giancarlo**
Vicolo Dotti, 13
I-31100 Treviso (IT)

(74) Representative: **Modiano, Guido et al**
MODIANO, JOSIF, PISANTY & STAUB Modiano & Associati Via Meravigli, 16
I-20123 Milan (IT)

EP 0 152 783 B1

Courier Press, Leamington Spa, England.

Description

The present invention concerns an insole designed to incorporate both a toe puff and a heel counter, particularly suitable for use in the manufacture of sports shoes.

Insoles designed in various styles and materials are well known for being formed as a special flat element which during assembly of a shoe is attached to a counter which provides reinforcement to a heel and to a toe puff at the front to stiffen the point of a shoe. This is particularly so in the case of sports shoes such as sports shoes and mountaineering shoes.

Usually, different materials are used for different parts of this assembly because the stiffness of various parts of the shoe must be different. During assembly, various parts have to be connected to each other by stitching and/or by means of adhesive. Very often the stitching projects from the insole surface and this can be uncomfortable for the person wearing the shoe.

Known from FR—A—2,119,653 is a ski boot having an inner boot formed in one piece with a boxed-in toe puff and a raised rear leg portion or quarter and which is formed by injection moulding a plastic material. The inner boot is designed exclusively for use inside a ski boot shell, and for imparting rigidity thereto, and has formed thereon protrusions which penetrate openings formed in the shell for holding the inner boot in position.

Thus, while the ski boot for FR—A—2,119,653 solved the problems of how to hold an inner boot in a correct position within a ski boot shell, and how to realize a stiff inner boot for imparting rigidity to the shell, this known type of inner boot could not readily be applied to any other type of footwear, because the protrusions which allow attachment of the inner boot to the shell by penetrating the shell can only be used with a shell having the necessary openings formed therein, and its characteristics of rigidity may be unsuitable for other types of footwear.

The technical problem of how to impart a desired degree of rigidity to an insole has also been considered in BE—A—384,248, which discloses an insole having a thicker outer region and a thinner central region for obtaining a stiffer outer region and a more flexible central region. However, while the stiffness characteristics of this insole may be ideal for one type of footwear, they may be completely unsuitable for another type of footwear, thus compelling the footwear manufacturer to stock a number of different types of insoles according to the different stiffness characteristics of each different type of footwear produced.

Prior patent BE—A—384,249 deals with the technical problem of how to impart an anotomic shape to an insole, to increase the surface area of contact between a wearers foot and the upper surface of the insole, and to this end, proposes the use of a metal strip or leaf spring embedded within the thickness of the structure of the insole. While this solution thus provides a means of imparting an antomic form to an insole, as well as a certain degree of rigidity, a footwear manufacturer would still have to compulsorily stock a number of different types of insoles having different characteristics of flexibility according to the different stiffness characteristics of each different type of footwear produced.

Accordingly, an aim of the present invention is to provide an insole which can be readily and easily adapted for use in different types of footwear.

Within the above cited aim, an object of the invention is to provide an insole which can be easily and rapidly adapted for imparting specific characteristics to footwear for special uses such as different types of sports footwear.

Another object of the invention is to provide an insole which simplifies footwear manufacture and which allows a footwear manufacturer to stock only one type of insole, which can then be easily and rapidly adapted as required for use in the different types of footwear.

A further object of the invention is to provide an insole which can be installed in a footwear item in such a way that it permits the attachment of accessories to the footwear item.

A not least object of the invention is to provide an economically advantageous one-piece insole including all the necessary parts which will simplify assembly and production of the eventual shoe or footwear, and which permits production of such footwear by utilizing standard equipment in the footwear industry.

A still further object of the invention is to provide a method of manufacturing an insole which can be easily and rapidly adapted for imparting specific characteristics to footwear for special uses such as different types of sports footwear.

This aim, and these and other objects which will become apparent hereinafter are achieved, according to one aspect of the invention, by an insole comprising at least one substantially flat element, a boxed-in toe puff formed at a front portion of said substantially flat element, a heel counter formed at a central back part of the heel portion of said flat element, and connecting edges laterally delimiting said flat element, interconnecting said toe puff and said heel counter and being connected to the upper surface of said flat element, said flat element, said boxed-in toe puff, said heel counter, and said connecting edges being contemporaneously formed by injection moulding a plastic material, characterized in that said insole further comprises selected support means, connected to said flat element and being adapted for selectively imparting to at least a portion of said substantially flat element a desired degree of stiffness according to the type of footwear in which said insole is to be used.

According to another aspect of the invention, the above-cited aim and objects are achieved by a method of manufacturing an insole comprising the step of:

— injection moulding a plastic material to form at least one substantially flat element having an upper surface, a lower surface, a front portion, and a heel part;

— forming at least one boxed-in toe puff at the front portion of said flat element;

— forming at least one heel counter at said heel part of said substantially flat element, and;

— forming connecting edges for laterally delimiting said flat element, interconnecting said toe puff and said heel counter and associating said connecting edges with said upper surface of said flat element, characterized in that it further comprises the steps of selecting and attaching to the flat element at least one support element, adapted for selectively imparting to the insole a desired degree of stiffness according to the type of footwear in which said insole is to be used.

Preferably, the insole is also formed with varying degrees of thickness for the obtainment of different degrees of local stiffness, as well as channels in its upper surface for stitching and a channel in its lower surface for housing either an entire supporting strip or a part thereof.

The invention will be described further, by way of example, with reference to the accompanying drawings, in which:

Fig. 1 is a perspective view of a preferred embodiment of an insole according to the invention;

Fig. 2 is a longitudinal section according to line II—II in Fig. 1;

Fig. 3 is an upside down view of the insole shown in Fig. 1 and the supporting strips which can be attached thereto;

Fig. 4 is a section according to line IV—IV in Fig. 3; and

Fig. 5 is a partial section of an assembled shoe incorporating the insole shown in Figs. 1 to 4.

With reference to the drawings, a preferred embodiment of the insole of the invention comprises a flat element, which is anatomically formed so as to resemble the underside of a foot, at the front of which a boxed in toe puff 2 is integrally formed and at the back of which a heel counter 3 is integrally formed. The heel counter 3 is formed as a raised edge at the central back part of the heel.

These three parts, namely the insole element 1, the toe puff 2 and the heel counter 3 are formed in one piece by a conventional method of injecting plastics material into an appropriate mould.

On the upper surface of the insole element 1 there are two grooves or channels 4 adjacent the side edges. These reduce the insole thickness and are designed to contain some assembly stitching when the rest of the shoe, namely the upper and sole are attached to the insole. In this way the stitching stays beneath the level of the upper surface of the insole and therefore no discomfort is caused to the wearer of the shoe.

The toe puff 2 has a plurality of flexing cuts 5 along its free edge enabling it to adapt itself as the shoe bends during walking.

Between the toe puff 2 and the heel counter 3 a side connecting edge 6 is provided which can either be lower or higher as shown by the dotted line 7.

The insole element 1 has a flexible and deformable central region 8 which is not as thick as the side or edge regions.

By appropriate selection of the thickness over the entire insole, varying deformability can be obtained thus making some parts more flexible and other parts stronger and stiffer.

The lower surface of the insole element 1 has a longitudinal channel 9 for receiving a stiff metal supporting strip or leaf spring 10 of the same size as the channel 9 which is attached by rivets passing through the respective holes 11 on the strip 10 and 12 on the insole. Alternatively, as shown in Fig. 3, the channel 9 may receive a portion 13 which is partially cut out of a larger supporting strip 14. This sort of strip 14 is additionally held in place by rivets passing through holes 15 in the strip 14 and corresponding holes 16 in the insole 1.

The strip 14 in this case extends rearwardly and at its end is formed as a hook 19 which will project from the assembled shoe.

In use the insole is assembled with an upper 17 and a sole 18 and these are attached together by stitching etc. to form a shoe, as illustrated in Fig. 5.

The insole has the desired stiffness and local deformability suitable for the use to which the shoe is to be put. It maintains its shape and does not alter the product in any way. Its shape is very important because with the toe puff and heel counter integrally formed it simplifies manufacture of the shoes. Moreover, the orthopaedic and functional characteristics of the product are improved.

The stitching which is necessary for attachment of the sole, upper and insole is contained in the channels 14 which prevent the thread from being ruined or from causing discomfort to the foot.

The combination of such insoles with metal supporting strips of different sizes and forms allows for shoes with specific characteristics for special uses. Indeed, the insole of the invention is particularly suitable for use in making sports footwear such as snow shoes and mountaineering boots.

It will of course be understood that the foregoing is illustrative and not limitative of the scope of the invention and variations are possible within the scope of the claims.

Claims

1. An insole comprising at least one substantially flat element (1), a boxed-in toe puff (2) formed at a front portion of said substantially flat element (1), a heel counter (3) formed at a central back part of the heel portion of said flat element (1), and connecting edges (6) laterally delimiting said flat element (1), interconnecting said toe puff (2) and said heel counter (3) and being connected to the upper surface of said flat element (1), said

flat element (1), said boxed-in toe puff (2), said heel counter (3), and said connecting edges (6) being contemporaneously formed by injection moulding a plastic material, characterized in that said insole further comprises selected support means (10, 14), connected to said flat element (1) and being adapted for selectively imparting to at least a portion of said substantially flat element (1) a desired degree of stiffness according to the type of footwear in which said insole is to be used.

2. An insole according to claim 1, characterized in that said support means (14) extends along at least a portion of the substantially flat element (1) and has at least one part (19) which protrudes therefrom.

3. An insole according to one claims 1 and 2, characterized in that said part (19) of said support means (14) protrudes rearwardly from said substantially flat element (1).

4. An insole according to claim 1, 2, or 3, characterized in that said support means (10, 14) are connected to said flat element by connection means (9, 11, 12, 14, 15) comprising at least one recess (9) and fixing means, and in that said support means (10, 14) comprises at least one strip-like element (10, 14), said recess (9) being formed in said lower surface of said substantially flat element (1) and adapted to at least partially accommodate said strip-like element (10, 14), said fixing means being adapted for selectively rigidly associating at least a portion (13) of said strip-like element (10, 14) with said recess (9).

5. An insole according to claim 3, characterized in that said part (19) of said strip-like element (14) which protrudes from said flat element (1) is formed as an attachment means (19).

6. An insole according to one or more of the preceding claims, characterized in that said attachment means (19) is adapted for permitting the attachment of accessories to said insole.

7. A method of manufacturing an insole comprising the step of:

— injection moulding a plastic material to form at least one substantially flat element (1) having an upper surface, a lower surface, a front portion, and a heel part;

— forming at least one boxed-in toe puff (2) at the front portion of said flat element (1);

— forming at least one heel counter (3) at said heel part of said substantially flat element (1), and;

— forming connecting edges (6) for laterally delimiting said flat element (1), interconnecting said toe puff (2) and said heel counter (3) associating said connecting edges (6) with said upper surface of said flat element (1), characterized in that it further comprises the steps of selecting and attaching to the flat element (1) at least one support element (10, 14), adapted for selectively imparting to the insole a desired degree of stiffnes according to the type of footwear in which said insole is to be used.

8. A method of manufacturing an insole according to claim 7, characterized in that it further comprises the step of forming in the upper surface of said flat element, channels (4) for accommodating stitching.

9. A method of manufacturing an insole according to claim 7 or 8, characterized in that it further comprises the steps of forming in the lower surface of said flat element at least one recess (9), and, and fixing in said recess (9), a support element comprising at least one strip-like element (10, 14).

10. A method of manufacturing an insole according to claim 9, further comprising the steps of:

— providing attachment means (19) associated with said support element (14), and;

— fixing at least a portion (13) of said support element (14) to said recess (9) such that said attachment means (19) protrude from said flat element (1).

Patentansprüche

1. Brandsohle, bestehend aus wenigstens einem im wesentlichen flachen Element (1), einer am Vorderteil des im wesentlichen flachen Elementes (1) ausgebildeten Vorderkappe (2), einer an einem zentralen Hinterteil des Fersenteiles des flachen Elementes (1) ausgebildeten Hinterkappe (3) und Verbindungsrändern (6), die seitlich das flache Element (1) begrenzen und die Voderkappe (2) und Hinterkappe (3) miteinander verbinden und mit der oberen Fläche des flachen Elementes (1) verbunden sind, wobei das flache Element (1), die Vorderkappe (2), die Hinterkappe (3) und die Verbindungsränder (6) gleichzeitig durch Spritzgießen eines Kunststoffes geformt sind, dadurch gekennzeichnet, daß die Brandsohle weiters eine Stützeinrichtung (10, 14) aufweist, welche mit dem flachen Element (1) verbunden und befähigt ist, selektiv wenigstens einem Teil des im wesentlichen flachen Elementes (1) einen gewünschten Steifheitsgrad entsprechend der Art des Schuhwerkes, in welchem die Brandsohle verwendet wird, mitzuteilen.

2. Brandsohle nach Anspruch 1, dadurch gekennzeichnet, daß sich die Stützeinrichtung (14) entlang wenigstens eines Teiles des im wesentlichen flachen Elementes (1) erstreckt und wenigstens einen vom ihm wegstehenden Teil (19) besitzt.

3. Brandsohle nach einem der Ansprüche 1 oder 2, dadurch gekennzeichnet, daß der Teil (19) der Stützeinrichtung (14) hinten von dem im wesentlichen flachen Element (1) wegsteht.

4. Brandsohle nach den Ansprüchen 1, 2 oder 3, dadurch gekennzeichnet, daß die Stützeinrichtung (10, 14) mit dem flachen Element mittels Verbindungseinrichtungen (9, 11, 12, 14, 15) verbunden ist, welche aus wenigstens einer Vertiefung (9) und Fixiereinrichtungen bestehen, und daß die Stützeinrichtung (10, 14) aus einem streifenförmigen Element (10, 14) besteht, wobei die Vertiefung (9) in der unteren Fläche des im wesentlichen flachen Elementes (1) ausgebildet und befähigt ist, zumindest teilweise das streifen-

förmige Element (10, 14) aufzunehmen, und die Fixiereinrichtungen befähigt sind, wenigstens einen Teil (13) des streifenförmigen Elementes (10, 14) der Vertiefung (9) selektiv starr zuzuordnen.

5. Brandsohle nach Anspruch 3, dadurch gekennzeichnet, daß der Teil (19) des streifenförmigen Elementes (14), der vom flachen Element (1) wegsteht, als eine Befestigungseinrichtung (19) ausgebildet ist.

6. Brandsohle nach einem oder mehreren der vorhergehenden Ansprüche, dadurch gekennzeichnet, daß die Befestigungseinrichtung (19) für die Befestigung von Zusatzteilen an der Brandsohle ausgebildet ist.

7. Verfahren zur Herstellung einer Brandsohle, umfassend die Stufen:

— Spritzgießen eines Kunststoffes, um wenigstens ein flaches Element (1) mit einer oberen Fläche, einer unteren Fläche, einem Vorderteil und einem Fersenteil zu bilden;

— Bildung wenigstens einer Vorderkappe (2) am Vorderteil des flachen Elementes (1);

— Bildung wenigstens einer Hinterkappe (3) am Fersenteil des im wesentlichen flachen Elementes (1); und

— Bildung von Verbindungsrändern (6) für die seitliche Begrenzung des flachen Elementes (1) und Verbindung der Vorderkappe (2) und der Hinterkappe (3), Vereinigung der Verbindungsränder (6) mit der oberen Fläche des flachen Elementes (1), dadurch gekennzeichnet, daß es weiters die Stufen der Auswahl und Anbringung wenigstens eines Stützelementes (10, 14) am flachen Element (1) zur selektiven Verleihung eines gewünschten Steifheitsgrades entsprechend der Art von Schuhwerk, in welchem die Brandsohle verwendet werden soll, umfaßt.

8. Verfahren zur Herstellung einer Brandsohle nach Anspruch 7, dadurch gekennzeichnet, daß es weiters die Stufe der Ausbildung von Rillen (4) in der oberen Fläche des flachen Elementes zur Unterbringung von Nähten umfaßt.

9. Verfahren zur Herstellung einer Brandsohle nach Anspruch 7 oder 8, dadurch gekennzeichnet, daß es weiters die Stufen der Ausbildung wenigstens einer Vertiefung (9) in der unteren Fläche des flachen Elementes und Fixierung eines Stützelementes, bestehend aus wenigstens einem streifenförmigen Element (10, 14), in der Vertiefung (9) umfaßt.

10. Verfahren zur Herstellung einer Brandsohle nach Anspruch 9, umfassend die weiteren Stufen:

— Schaffung einer Befestigungseinrichtung (19), die dem Stützelement (14) zugeordnet ist; und

— Fixierung wenigstens eines Teiles (13) des Stützelementes (14) in der Vertiefung (9), so daß die Befestigungseinrichtung (19) von flachen Element (1) wegsteht.

Revendications

1. Première comprenant au moins un élément sensiblement plat (1), un bout encastré (2) constitué à une partie avant dudit élément sensiblement plat (1), un contrefort (3) constitué à une partie centrale arrière du talon dudit élément sensiblement plat (1) et des arêtes de connexion (6) délimitant latéralement ledit élément plat (1), interconnectant ledit bout (2) et ledit contrefort (3) et étant connectées à la face supérieure dudit élément plat (1), ledit élément plat (1), ledit bout encastré (2), ledit contrefort (3), et lesdites arêtes de connexion (6) étant simultanément formés en moulant par injection un matériau plastique, caractérisée en ce que ladite première comprend de plus des moyens de support sélectionnés (10, 14), connectés audit élément plat (1) et étant aptes à communiquer sélectivement à au moins une partie dudit élément sensiblement plat (1) un degré de rigidité désiré selon le type de chaussures dans lequel ladite première doit être utilisée.

2. Première selon la revendication 1, caractérisée en ce que ledit moyen de support (14) s'étend le long d'au moins une partie de l'élément sensiblement plat (1) et comprend au moins une partie (19) qui en fait saillie.

3. Première selon l'une des revendications 1 et 2, caractérisée en ce que ladite partie (19) dudit moyen de support (14) fait saillie vers l'arrière à partir dudit élément sensiblement plat (1).

4. Première selon l'une des revendications 1, 2, ou 3, caractérisée en ce que lesdits moyens de support (10, 14) sont connectés audit élément plat par des moyens de connexion (9, 11, 12, 14, 15) comprenant au moins un renfoncement (9) et des moyens de fixation, et en ce que lesdits moyens de support (10, 14) comprennent au moins un élément en forme de bande (10, 14) ledit renfoncement (9) étant formé dans ladite face inférieure dudit élément sensiblement plat (1) et étant apte à recevoir au moins partiellement ledit élément en forme de bande (10, 14), lesdites moyens de fixation étant aptes à associer au moins une partie (13) dudit élément en forme de bande (10, 14) avec ledit renfoncement (9) d'une façon sélectivement rigide.

5. Première selon la revendication 3, caractérisée en ce que ladite partie (19) dudit élément en forme de bande (14) qui fait saillie dudit élément plat (1) est réalisés sous forme de moyen d'attache (19).

6. Première selon une ou plusieurs des revendications précédentes, caractérisée en ce que ledit moyen d'attache (19) est agencé pour permettre d'attacher des accessoires à ladite première.

7. Procédé pour fabriquer une première comprenant les étapes consistant à:

— mouler par injection un matériau plastique pour former au moins un élément sensiblement plat (1) possédant une face supérieure, une face inférieure, une partie avant, et une partie de talon;

— former au moins un bout encastré (2) à la partie avant dudit élément plat (1);

— former au moins un contrefort (3) à ladite partie de talon dudit élément sensiblement plat (1); et

— former des arêtes de connexion (6) pour

délimiter latéralement ledit élément plat (1), interconnectant ledit bout (2) et ledit contrefort (3) associant lesdites arêtes de connexion (6) avec ladite face supérieure dudit élément plat (1), caractérisé en ce qu'il comprend de plus les étapes consistant à sélectionner et attacher à l'élément plat (1) au moins un élément de support (10, 14), apte à communiquer sélectivement à la première un degré de rigidité désiré selon la type de chaussures dans laquelle la première doit être utilisée.

8. Procédé pour fabriquer une première selon la revendication 7, caractérisé en ce qu'il comprend de plus l'étape consistant à former dans le face supérieure dutit élément plat, des canaux pour recevoir des coutures.

9. Procédé pour fabriquer une première selon la revendication 7 ou 8, caractérisé en ce qu'il comprend de plus les étapes consistant à former dans la face inférieure dudit élément plat au moins un renfoncement (9), et de fixer dans ledit renfoncement (9), un élément de support comprenant au moins un élément en forme de bande (10, 14).

10. Procédé pour fabriquer une première selon la revendication 9, comprenant de plus les étapes consistant à:

— fournir des moyens d'attache associés audit élément de support (14), et;

— fixer au moins une partie (13) dudit élément de support (14) audit renfoncement (9) de manière que le moyen d'attache (19) fasse saillie dudit élément plat (1).

TAV. I

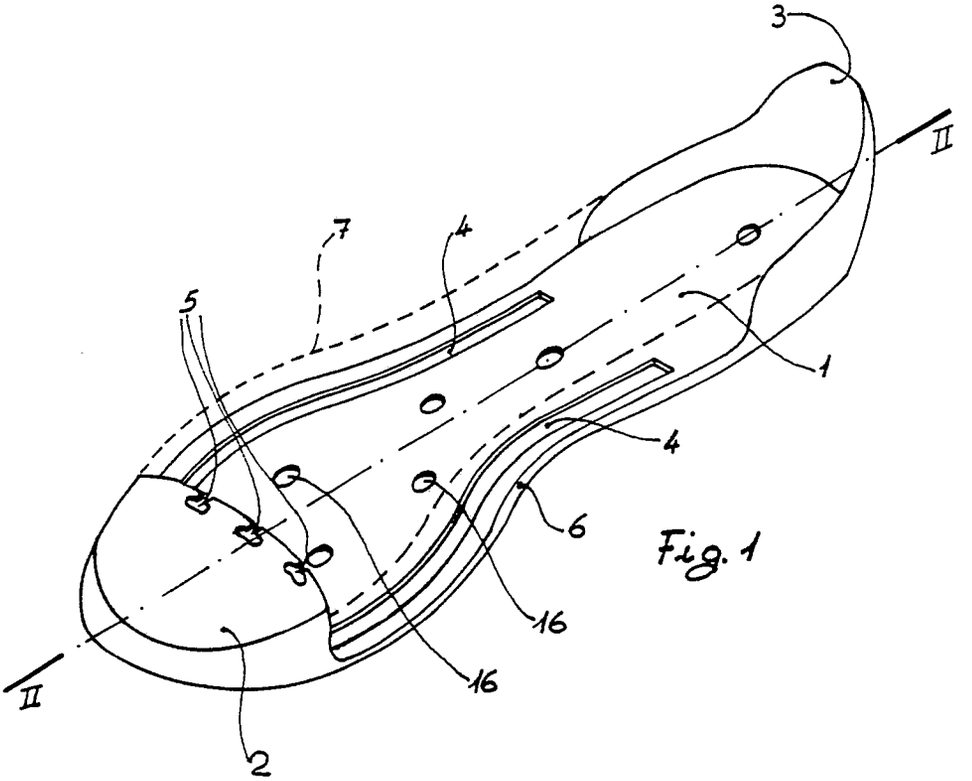

Fig. 1

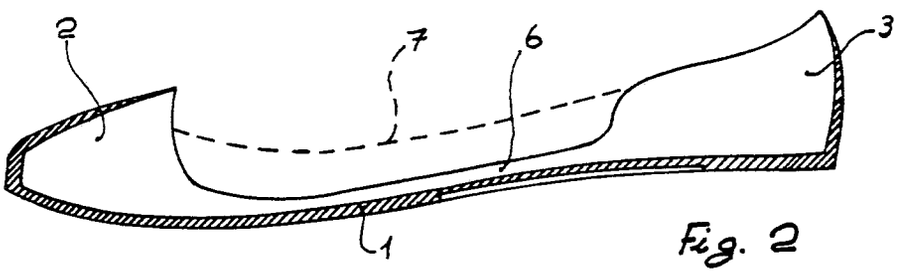

Fig. 2

TAV. II

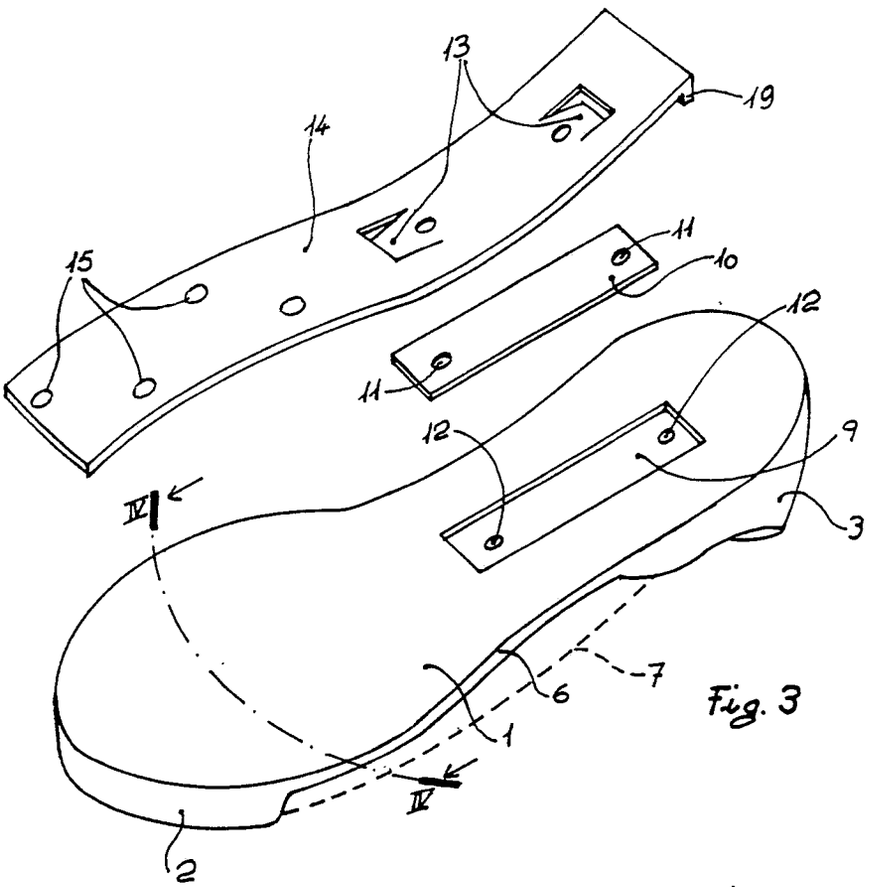

Fig. 3

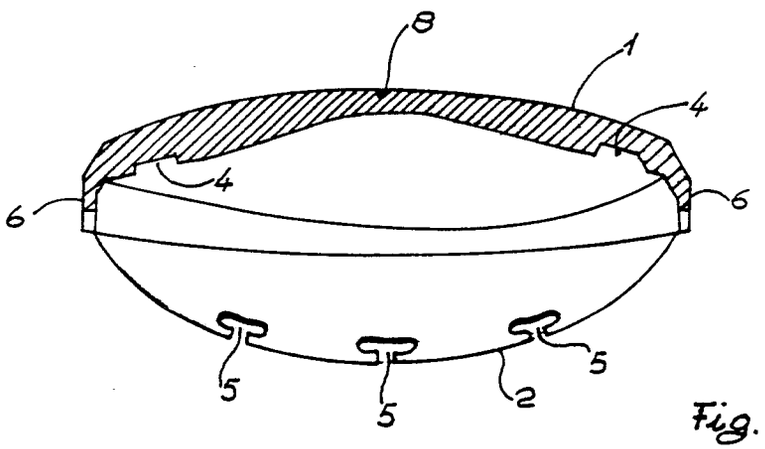

Fig. 4

TAV. III

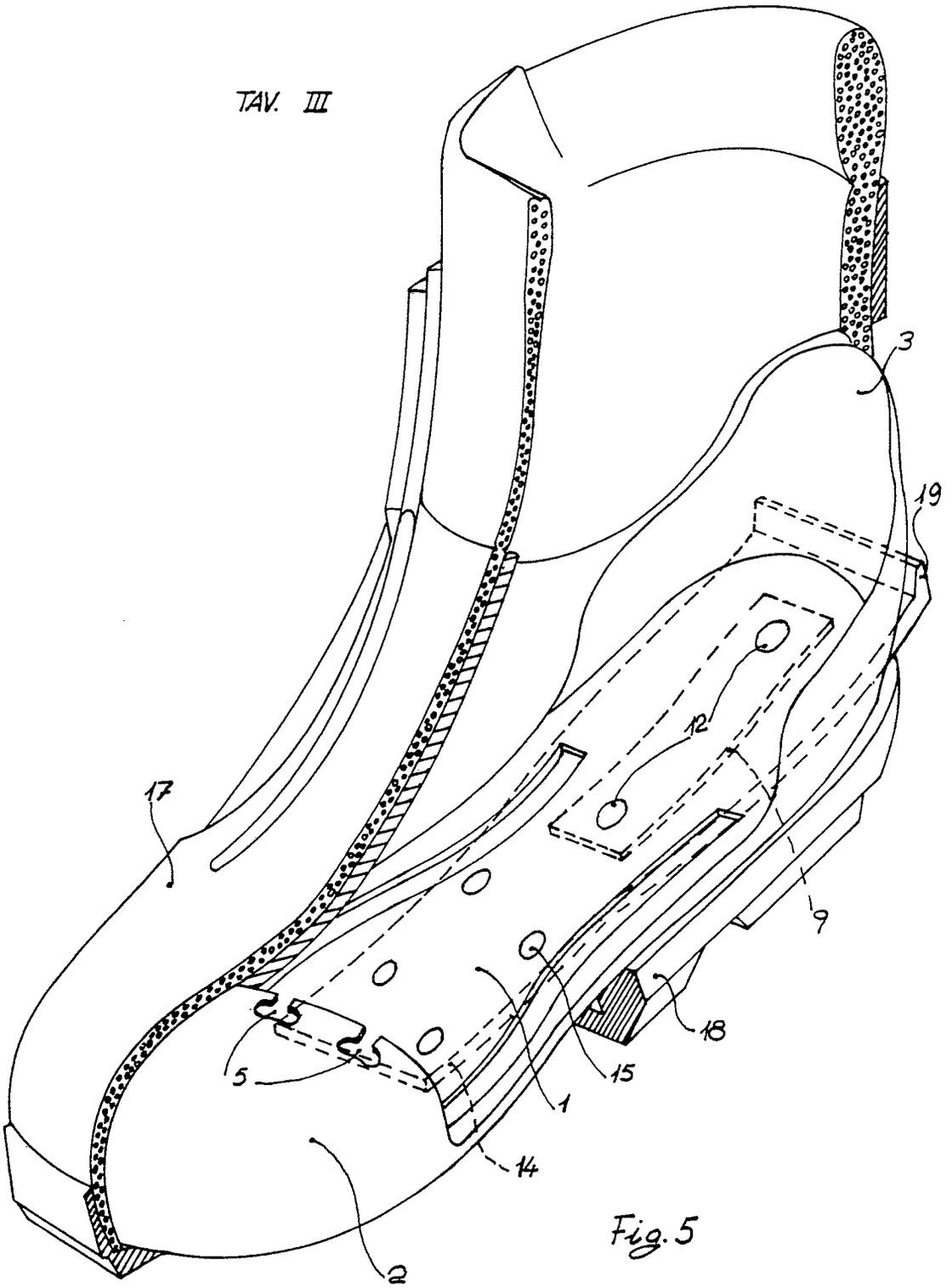

Fig. 5