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(54) **Title:** BASE FOR FOOTWEAR AND FOOTWEAR PROVIDED WITH SUCH A BASE

(57) **Abstract:** Base (10) for footwear provided with a sole and a heel, whereby the sole comprises a counter part (11), a shank (12) part connected therewith, and a tip part (13) connected with the shank part, whereby the heel extends from the counter part to a tread and in which the base is constructed in that the length of the heel from the counter part to the tread is adjustable, characterized in that the heel is mainly shaped in the form of an L with a first (21) and a second (22) heel part, each at the end provided with a tread (23, 24), whereby the heel is movable from a first position in which the first heel part (21) extends transversally of the counter part and wherein the heel fixes the counter part and the shank part, enclosing a first angle, to a second position wherein the second heel part (22) extends transversally of the counter part and wherein the heel fixes the counter part and the shank part, enclosing a second angle.

Title: Base for footwear and footwear provided with such a base

The invention concerns a base for footwear provided with a sole and a heel, whereby the sole comprises a counter part, and a shank part being connected therewith, and a tip part connected with the shank part, whereby the heel extends from the counter part to a tread and in which the base is constructed in that the length of the heel from the counter part to the tread is adjustable.

A similar base is known from the state of the art. Patent GB2393379A shows a base for footwear of which the sole is built up from elements that are pivotally connected to each other. A removable heel can be connected to the sole. The sole obtains its rigidity by attaching the heel to the sole. Heels with different lengths are attachable to the sole. Each height is related to a specific shape of the sole, such that the shape of the sole is in conjunction with the height of the heel attached to the sole.

An important disadvantage of the base according to GB2393379A is the fact that for changing the height of the heel, loose elements are used. A user must install a second heel to adjust the height of the heel.

A further disadvantage of the solution according to GB2393379A is the fact that switching from the first to the second heel height is relatively complicated. To make the sole of the footwear according to GB2393379A sufficiently stiff, the loose part is relatively big and heavy.

Regarding the above disadvantages, the aim of the invention is to provide a base according to the introduction, with which the user can adjust the height of the heel in a user-friendly fashion, wherein preferably no loose parts are used.

To reach that goal, the invention provides for footwear according to the introduction, of which the heel is mainly shaped in the form of an L with a first and a second heel part, each at the end provided with a tread, whereby the heel is movable from a first position, in which the first heel part extends transversely on the counter part of the base and wherein the heel fixates the counter part and the shank part of the base, enclosing a first angle, to a second position wherein the second heel part extends transversely on the counter part of the base and wherein the heel fixates the counter part and the shank part of the base, enclosing a second angle.

By this means, the footwear according to the invention is provided with a fixed heel permanently attached to the sole. To adjust the height of the heel, it is sufficient to move the

heel according to the invention from the first to the second position thereof. The heel is constructed in that the footwear in the first position of the heel is provided with a relatively high heel and in the second position with a relatively low heel. The move of the heel from the first to the second position thereby provides for an adjustment of the angle between the counter part and the shank part of the sole. That means that that angle is optimally adjusted to the height of the heel, in both positions, to guarantee enough walking comfort in both positions.

According to the invention it is possible that the heel is pivotally attached to the sole, whereby the base is provided with bolting means to bolt the heel in the first and second position.

Thereby it is possible that the heel is pivotally connected to the shank part of the base, wherein the bolting means are adjusted for fixating the angle between the heel and the shank part of the base.

The effect of this means is that the angle between the heel and the shank part of the base is fixated in both positions of the heel, to guarantee normal use of the footwear in both positions.

According to the invention it is possible that the bolting means comprise of a cam and a bolting slot for receiving that cam. Thereby it is possible that the cam is connected to the heel, whereby the bolting slot is incorporated in the counter part of the base.

By this means it is possible to fixate the heel by means of enclosing the cam of the heel. The shank part of the base is used as a bolt to prevent rotation or other displacement of the heel with respect to the sole.

According to the invention it is possible that the shank part is provided with an extension in the shape of a lip or tongue, whereby the heel is provided with a slot for receiving that lip or tongue, whereby the lip or tongue together with the heel slot allow for a rotation of the heel with respect to the shank part of the base.

The lip or tongue seizes into a slot in the heel. Therefore the heel can rotate around the lip or tongue. The lip or tongue therefore provides a rotation axis that lies outside the body of the shank part of the base. In this way, a pivotal point is formed between the heel and the shank part of the base, without the limited thickness of the shank part of the base or the specific shape thereof forming an obstruction for the targeted rotation of the heel with respect to the sole.

According to the invention, it is further possible that at least a part of the contact plane between the lip or tongue and the heel slot is constructed in a circular form. The circle-shaped trajectory of the slot guides the turning movement of the heel with respect to the sole.

According to an embodiment of the invention it is possible that the sole is provided with a shank iron, whereby the lip or tongue is connected with this shank iron.

According to the invention it is further possible that the sole is provided with a first sole slot for receiving the tread of the second heel part, in the first position of the heel. By this means it is made possible that in the first position of the heel, whereby a first tread is available under the counter part of the base, the second tread, which does not have an active function in this position, is received in the sole. That means that this second tread is not (inelegantly) visible from the outside of the footwear. For example, potential wear on this second tread does not have a negative effect on the exterior of the footwear in the first position of the heel.

The same applies for the use of the heel in the second position thereof. The first tread is in this case received in the sole and does not have any effect on the exterior of the footwear. This is being achieved because the sole is provided with a second sole slot for receiving the tread of the first heel part, in the second position of the heel. The second sole slot is provided in the shank part of the sole.

According to the invention, it is arranged that the surface of the tread at the end of the second heel part is larger than the surface of the tread at the end of the first heel part. The relatively large surface of the second tread primarily allows for sufficient stability in the low position of the heel. The stability is being reached by a relatively wide surface at the end of the second heel part. The large surface is further advantageous to prevent excessive wear of the tread.

According to the invention it is possible that the sole at the lower side is provided with a lining of flexible material, like rubber. A first effect of this is the fact that the sole at the lower side is protected against the penetration of dirt and liquid in the sole. Besides, the lining takes care of an even and uninterrupted exterior of the sole. Further it is possible that the flexible lining makes sure that the movement of the parts of the sole with respect to each other and with respect to the heel is not obstructed, in case dirt particles are caught in one of the slots in the different parts of the base of the footwear. The lining can deliver flexibility and absorb possible dirt particles.

According to the invention it is further possible that the angle between the tip part and the shank part is adjustable. This is for example achieved because the sole, in the area between the shank part and the tip part, comprises of rubber. As an alternative, it is possible that the sole is provided with a sole element that on the one end is connected to the tip part, and on the other end is connected to the heel, for the adjustment of the angle between toe part and shank part, with the help of the heel, whereby the sole element is constructed as a, mainly stretch free, tape.

According to a second aspect of the invention, provided is for footwear, provided with the base according to the invention.

The invention will be discussed below, by means of a non-restrictive embodiment example, by means of accompanying drawings, wherein:

Fig. 1 shows schematically the base according to the invention in the first position thereof;
Fig. 2 shows schematically the base according to the invention in the second position thereof;
Fig. 3 shows a possible embodiment of the base according to the invention, whereby the different parts of the base are represented above each other;
Fig. 4, 5 and 6 show the different parts according to Fig. 3 in their assembled state;
Fig. 7 shows an alternative embodiment for the bolting of the heel under the sole;
Fig. 8 shows a further alternative for the bolting of the heel under the sole;
Fig. 9 shows a further alternative for the bolting of the heel under the sole;
Fig. 10 shows a further alternative for the bolting of the heel under the sole;
Fig. 11, 12 and 13 show an embodiment of the base according to the invention, whereby the sole is provided with a flexible element, like a tape, for the adjustment of the angle between the tip part and the shank part, when moving the heel from the first to the second position;
Fig. 14, 15, 16 and 17 show embodiments of footwear provided with the base according to the invention, wherein the upper is adapted to the relative angle changes between the counter, shank and tip parts.

Fig. 1 shows schematically the base 10 according to the invention. The base 10 comprises a counter part 11 that is pivotally connected to a shank part 12, via a hinge 15. The shank part 12 is on the other end thereof connected to the tip part 13. Between the shank part 12 and the toe part 13 a hinge construction can be introduced (not shown).

According to Fig. 1, the shank part 12 is connected to the toe part 13 via a flexible area 14. The base 10 comprises further a heel 16. The heel 16 comprises of a first, relatively long heel part 21, at the end provided with a first loopvlak 23 and a second heel part 22, at the end provided with a tread 24. On the heel 1 there are two cams introduced (in Fig. 1 only 1 cam 25 is visible) that are received by a slot 26 in the counter part 11 of the base.

In the shank part 12, a shank iron 30 is attached, for example with help of an adhesive. At the end of the shank iron 30, a lip or tongue 31 is present that is seizing at the lower side of the counter part 11.

In the heel 16 a slot 17 is introduced, for receiving the lip or tongue 31 of the shank iron 30. The heel 16 can rotate around the seizing surface in between the slot 17 and the lip or tongue 2, from a first position, as represented in Fig. 1, to a second position (see Fig. 2).

In the position that is represented in Fig. 1, the counter part 11, the shank part 12 and the heel 16 are fixed with respect to each other, because the cam 25 is enclosed in the slot 26. The slot 26 has opposite sides 27 and 28 that are slightly tapered, to ease the receiving of the cam 25 in the slot on the one hand and, on the other hand, to prevent latitude occurring between the cam 25 and the sides 27 and 28 at the moment that the cam 25 is pressed in the slot 26. Thereby, in the slot 17 of the heel 16 can be positioned an elevation 29, that dovetails the position of the lip or tongue 31 of the shank iron 30. This elevation 29 prevents the movement of the shank part 12 and the heel 16 with respect to each other, at the moment that the cam 25 is located in the slot 26.

In the position as represented in Fig. 1, the counter part 11 and the shank part 12 enclose a first angle α_1 that belongs to an optimal mutual position at the height of the heel 16 in the represented position.

In Fig. 1 it is further visible that the second tread 24 is received in a slot 18 at the lower side of the counter part 11.

In the in Fig. 1 represented position, a user can walk on the base, without the latter risking involuntary movement of the heel 16 from the first stage to the second stage (see Fig. 2). The movement of the heel to the second position is schematically indicated with the arrow II in Fig. 1. The movement of the heel 16 in the opposite direction III is stopped by bolting the cam 25 in the slot 26. Furthermore, the end of the tongue or lip 31 is pressed against the contact surface 5. That means that also the mutual force of the inner side of the slot 17 on the tongue or lip 31 helps to counterforce the movement in the direction of arrow III.

To move the heel 16 from the first position to the second position, the counter part is rotated around the pivotal point 15 with respect to the shank part 12. By this rotational movement, the cam 25 comes free from the slot 26 in the counter part 11. As a result, a rotation of the heel 16 around the lip or tongue 31 is no longer obstructed. The heel 16 can now be moved to the second position thereof, which is represented in Fig. 2.

In Fig. 2, the base 10 according to the invention is represented, whereby the heel 16 is bolted in the second position thereof. The second heel part 22 extends in this position transversely with respect to the heel part 11. As a result, the second tread 24 is moved to the active position thereof. The first heel part 21 extends mainly parallel to the shank part 12. The first tread 23 at the end of the first heel part 21 is in this position received in the slot 19 in the shank part 12.

The heel part 11, the shank part 12 and the heel 16 are in this position fixed with respect to each other with help of the cam 25 that in a second position is received in the slot 26; the opposite side 27 and 28 seize at two other outside partitions of the cam 25.

Thereby, the end of the tongue or lip 31 dovetails the other side of the elevation 29. Partially because of this, the movement of the shank part 12 with respect to the heel 16 is obstructed, at the moment that the cam 25 is positioned in the slot 26.

In Fig. 2 it is visible that by the movement of the heel 16 from the first to the second position, also the angle α in between the counter part 11 and the shank part 12 is changed. Angle α_2 is smaller than angle α_2 and is adjusted to the length of the heel in the second position of the heel 16 with respect to the sole.

It is noted that for an optimal walking comfort, also the angle between the tip part 13 and the shank part 12 could be adjusted. A possible solution is being discussed with help of Figures 11, 12 and 13.

As an alternative, the tip part 13 and the transition between the shank part 12 and the tip part 13 can be constructed flexibly in that the angle adjustment is being achieved automatically, influenced by the weight of the foot of the user.

At the transition area between the shank part and the tip part, the sole can be provided with a bending, that allows the sole to bend easier upward than downward. This bending can be implemented in that the sole in the high position offers enough resistance against downward bending, such that a 'neutral position' can be identified, while the sole is still sufficiently flexible to, in the low position, bend under the weight of the foot of the wearer.

In Fig. 3, a possible embodiment of the base 10 is represented, in perspective. Fig. 3 shows a sole that comprises a counter part 11, a shank part 12 connected therewith, and a tip part 13 connected with the shank part. Further Fig. 3 shows the shank iron 30 that is placed in a slot in the shank part 12.

At the lower side of the counter part 11, the slots 26 are visible wherein the cams 25 of the heel 16 are received. As part of the counter part 11, a metal strengthening 40 can be provided. This strengthening 40 is for example folded from steel plate. The strengthening is provided with slots 26. That means that the slot is executed wear free.

Fig. 3 shows further the heel 16 with a potential strengthening element 41, for example steel based, provided with the cams 25. The lower side of the sole is lined with a lining 42. This lining is for example made of rubber. The Figures 4, 5 and 6 show respectively the shank iron 30, the heel 16 and the strengthening element 41 in their assembled state.

Fig. 7 shows an alternative bolt for the heel 16 in the extreme positions thereof, whereby the bolting takes place with the help of a dowel. This dowel is for example spring based.

Fig. 8 shows a further alternative bolt whereby a bolting element 50 is collapsible and extendable, for the in two positions seizing of the tongue or lip 31, for bolting the heel 16 therewith, in the first or the second position thereof. According to Fig. 8 the heel 16 is rotationally connected to the counter part 11.

Fig. 9 shows an alternative bolting of the heel whereby a bolting element 51 is clasped between heel 16 and counter part 11. The heel 16 is pivotally attached to the counter part 11. The turning between heel 16 and counter part 11 is only possible when the bolting element 51 is not present. Fig. 10 shows another alternative bolting of the heel whereby two bolting elements 52 are attached in the sole. The bolting elements are acted on by a spring element 53.

When the first heel part 21 of the second heel part 22 is moved to the opening 55 in the sole, the bolting elements 52 are pressed against the resisting springs 53 to the outside, such that the heel can be received in the slot 55. In this position the heel can only move back, when the bolting elements 52 are pressed.

The Figures 11, 12 and 13 show embodiments of the base 10, whereby the base 10 is provided with an adjustment mechanism for adjusting the angle γ between the shank part 12 and the tip part 13. The adjustment mechanism comprises an element 60, such as a tape or tie

that with a first end 61 is connected to the tip part 13. The element 60 extends from the adherence 61 via the shank part 12 in the direction of a second adherence 62 on the heel 16.

In Fig. 12, the heel 16 is represented in the first position thereof. When the heel is moved from this first position in the direction of the second position (as represented in Fig. 13), the tongue or lip 31 of the shank iron 30 is pressed in the slot 17 of the heel 16. This causes the element 60 to be put under tension. With increasing the tension on the element 60, the tip part is pulled to the second position thereof, in which second position the angle γ is smaller than the angle γ as represented in Fig. 11.

In the Figures 14, 15, 16 and 17 the different embodiments are shown for an upper for the footwear that can be used with the base 10 according to the invention.

In Fig. 14 an upper is shown for which at least in the areas 70 and 71 a flexible material is used, like stretching leather, such that the upper can follow the change of the angle between the counter, shank and tip parts.

Fig. 15 shows footwear whereby the upper is partially left open such that it does not obstruct the angle changes between counter, shank and tip parts.

Fig. 16 shows an upper that is provided with folds such that it can follow the angle changes between the counter, shank and tip parts.

Fig. 17 shows an upper, of which the sides are partially left open. The part of the upper that dovetails the counter part, and the part of the upper that dovetails the tip part, are connected with two links. The links are in such a way introduced with respect to the turning points in the sole parts, that their length stays the same in both positions.

Claims

1. Base for footwear provided with a sole and a heel, whereby the sole comprises a counter part, and a shank part connected therewith, and a tip part connected with the shank part, whereby the heel extends from the counter part to a tread and in which the base is constructed in that the length of the heel from the counter part to the tread is adjustable, characterized in that, the heel is mainly shaped in the form of an L with a first and a second heel part, each at the end provided with a tread, whereby the heel is movable from a first position, in which the first heel part extends transversely on the counter part of the base and wherein the heel fixates the counter part and the shank part of the base, enclosing a first angle, to a second position wherein the second heel part extends transversely on the counter part of the base and wherein the heel fixates the counter part and the shank part of the base, enclosing a second angle.

2. Base according to claim 1, whereby the heel is rotationally connected to the sole, and whereby the base is provided with bolting means for the bolting of the heel in the first and the second position.

3. Base according to claim 2, whereby the heel is rotationally connected with the shank part, whereby the bolting means are adjusted for fixing of the angle of the heel with respect to the shank part.

4. Base according to claim 2 or 3, whereby the bolting means comprise of a cam and a bolting slot for receiving that cam.

5. Base according to claim 4, whereby the cam is connected to the heel, whereby the bolting slot is implemented in the counter part.

6. Base according to one of the claims 3-5, whereby the shank part is provided with an extension in the form of a lip or tongue, whereby the heel is provided with a heel slot for receiving that lip or tongue, whereby the lip or tongue together with the heel slot enable a rotation of the heel with respect to the shank part.

7. Base according to claim 6, whereby at least a part of the contact area in between the lip or tongue and the heel slot is constructed in a circular form.

8. Base according to claim 6 or 7, whereby the sole is provided with a shank iron, whereby the lip or tongue is connected to the shank iron.

9. Base according to one of the previous claims, whereby the sole is provided with a first sole slot for the receiving therein of the tread of the second heel part, in the first position of the heel.

10. Base according to claim 9, whereby the first sole slot is provided in the counter part of the sole.

11. Base according to one of the previous claims, whereby the sole is provided with a second sole slot for receiving therein the tread of the first heel part, in the second position of the heel.

12. Base according to claim 11, whereby the second sole slot is provided in the shank part of the sole.

13. Base according to one of the previous claims, whereby the surface of the tread at the end of the second heel part is larger than the surface of the tread at the end of the first heel part.

14. Base according to one of the previous claims, whereby the sole at the lower side is provided with a lining of flexible material, like rubber.

15. Base according to one of the previous claims, whereby the angle in between the tip part and the shank part is adjustable.

16. Base according to claim 15, whereby the sole in the area between the shank part and the tip part comprises of a flexible material, like rubber.

17. Base according to claim 15 or 16, whereby the sole is provided with a sole element that at the one end is connected to the tip part and at the other end is connected with the heel, for the adjustment of the angle between the tip part and the counter part, with help of the heel.

18. Base according to claim 17, whereby the sole element is constructed as a mainly stretch free tape.

19. Footwear, provided with a base according to one of the previous claims.

FIG. 1

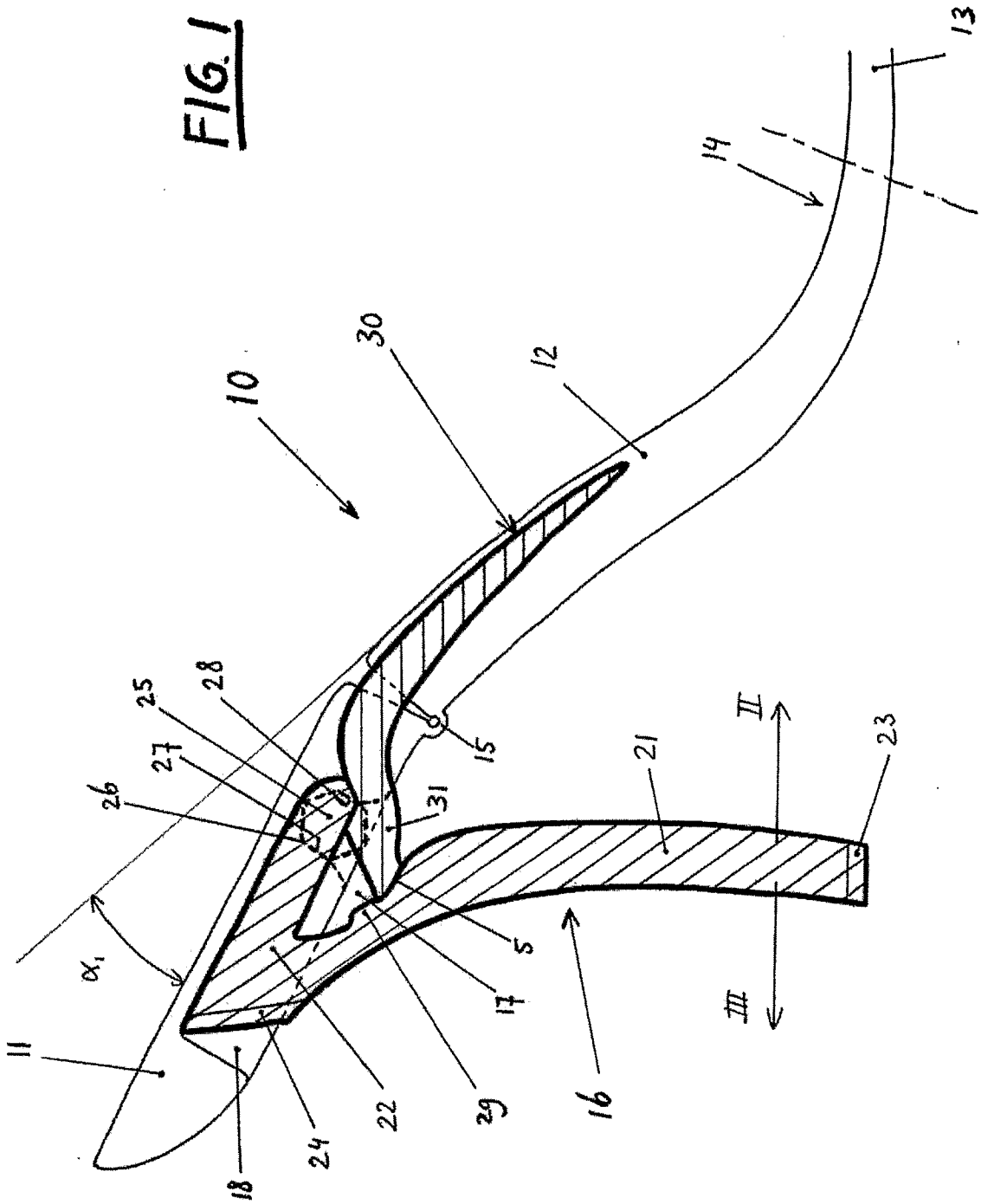

13
14
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28
25
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31
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II
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5
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III
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α_1
11
22
29
24
18

FIG.2

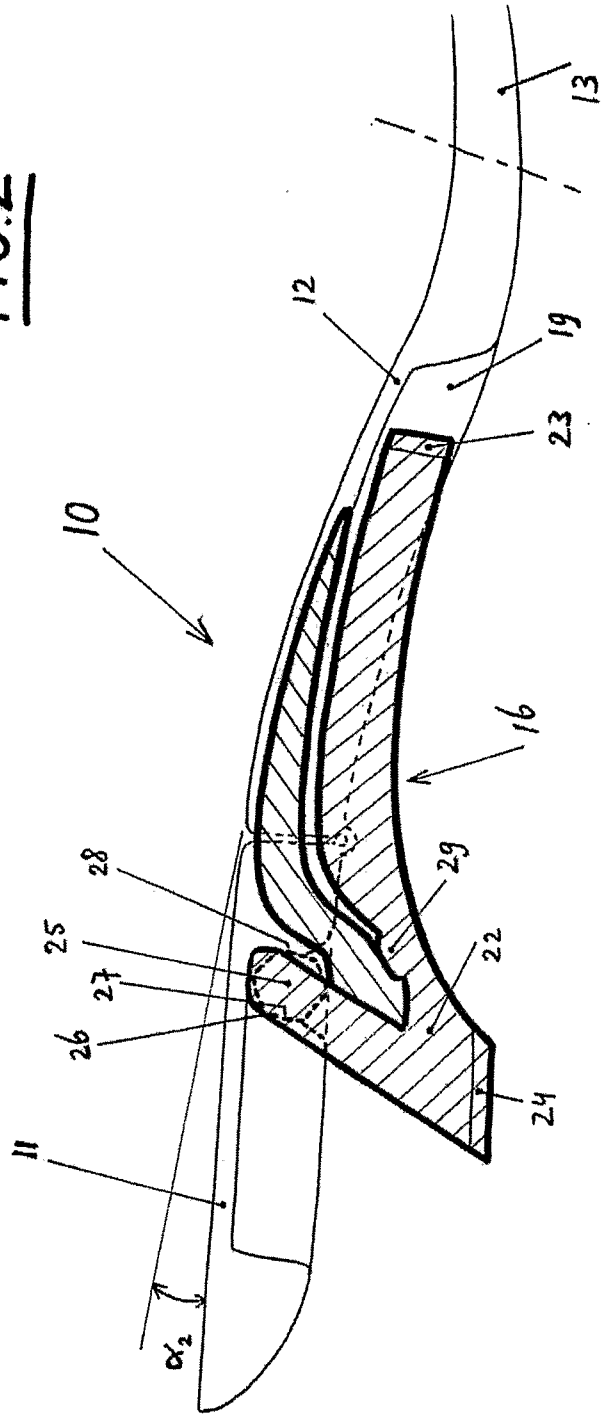


FIG. 3

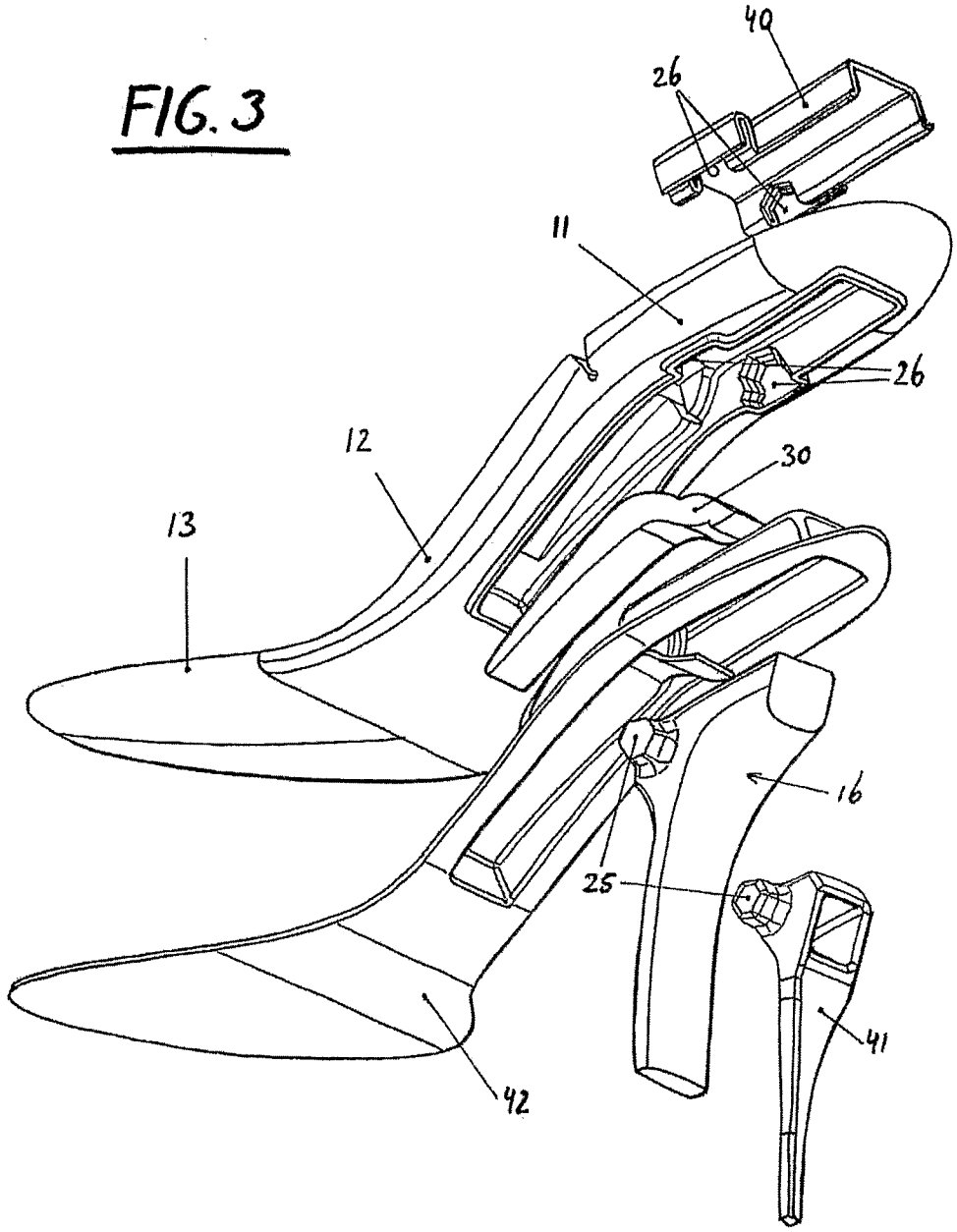


FIG. 4

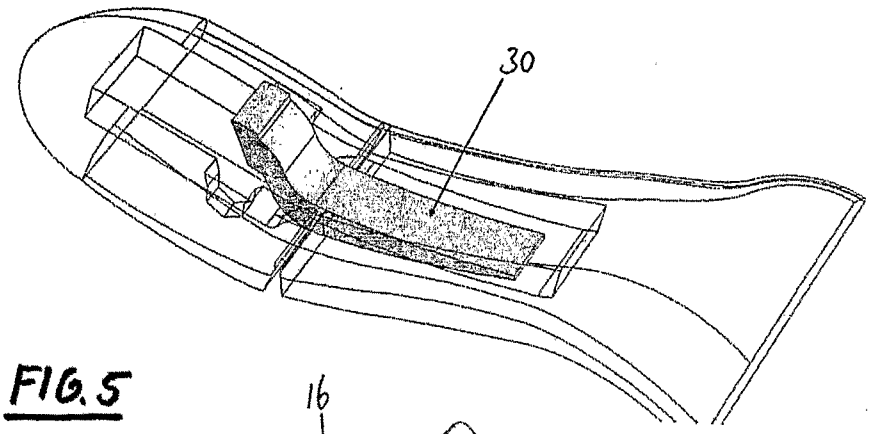


FIG. 5

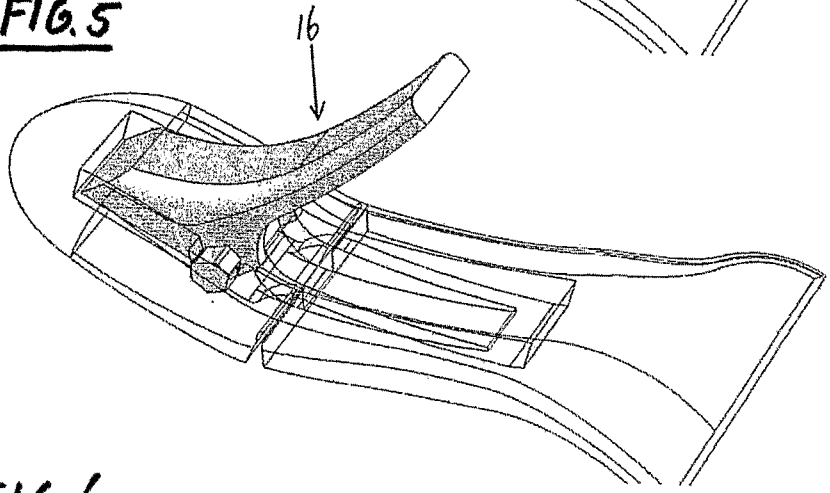


FIG. 6

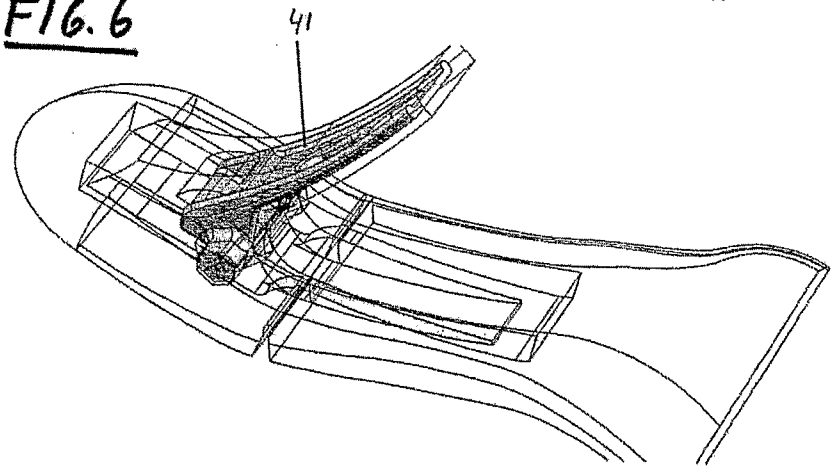


FIG. 7

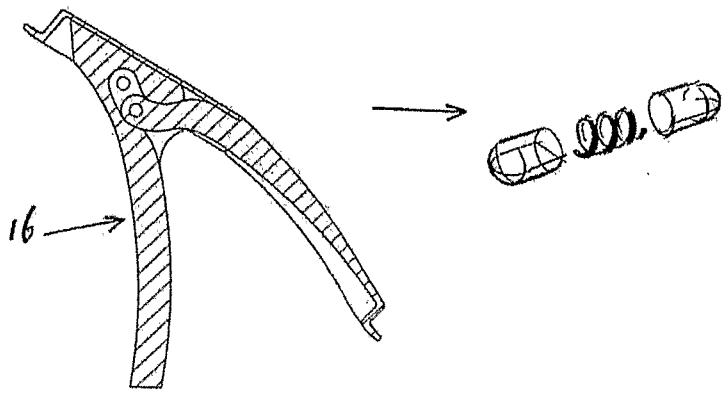


FIG. 8

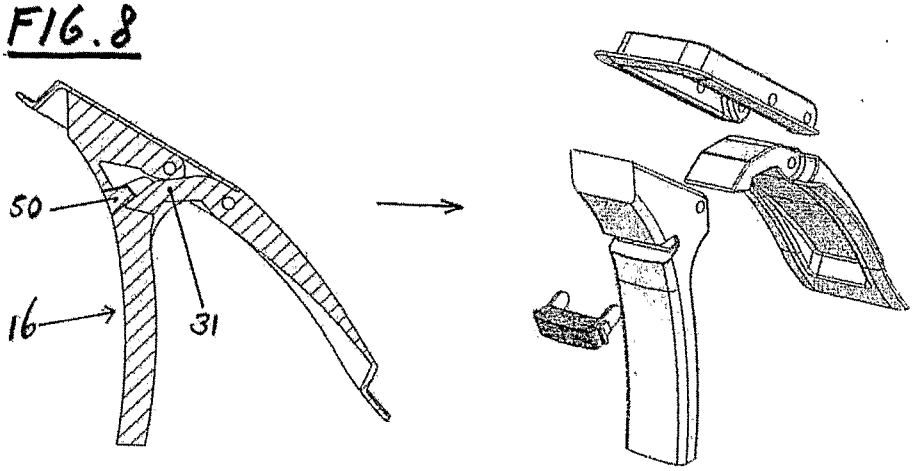


FIG. 9

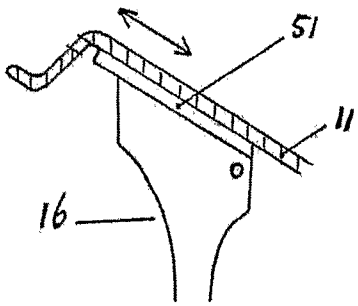


FIG. 10

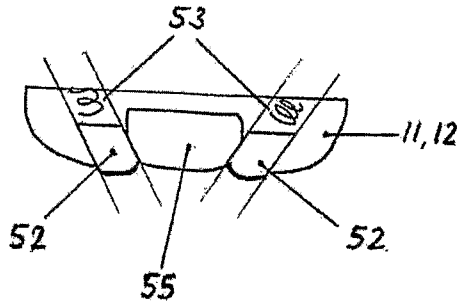


FIG. 11

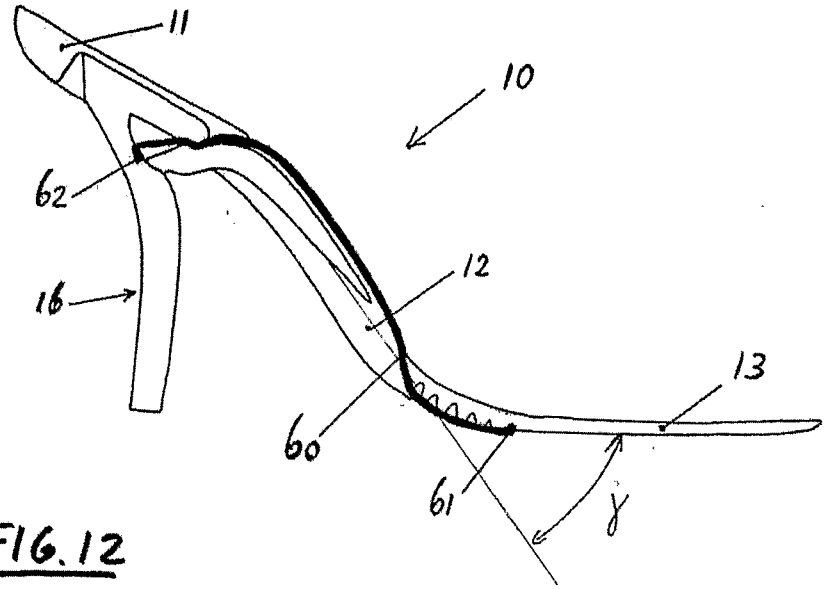


FIG. 12

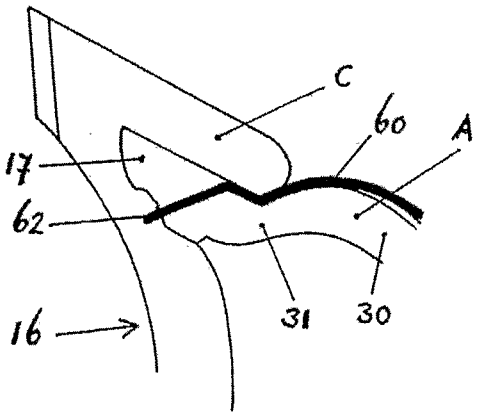
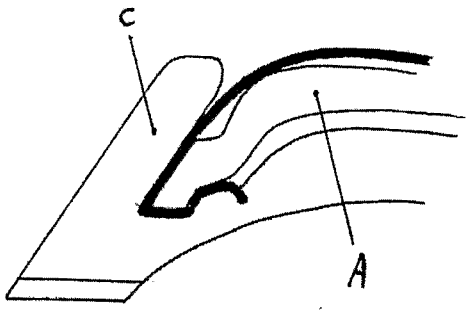


FIG. 13



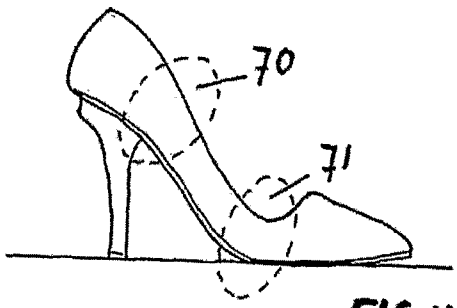


FIG.14

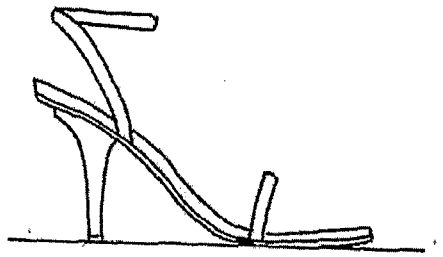


FIG.15

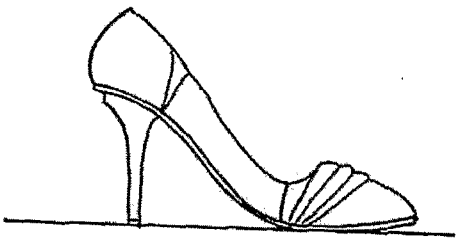


FIG.16



FIG.17

INTERNATIONAL SEARCH REPORT

International application No
PCT/NL2007/000049

A. CLASSIFICATION OF SUBJECT MATTER
INV. A43B3/24 A43B21/433

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
A43B

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)
EPO-Internal

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
P,X	WO 2006/037143 A (WALKING CHAIR DESIGNSTUDIO GMB [AT]; PIRCHER KARL EMILIO [AT]) 13 April 2006 (2006-04-13)	1-5,13, 14,19
P,Y	the whole document	11,12, 15-18
Y	US 5 309 651 A (HANDEL DAVID B [US]) 10 May 1994 (1994-05-10)	11,12, 15-18
A	figures 11,11a	1
P,X	NL 1 029 372 C2 (KREUWEL WOUTER HENK [NL]) 2 January 2007 (2007-01-02) the whole document	1-5, 14-19

☐ Further documents are listed in the continuation of Box C.

☒ See patent family annex.

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Date of the actual completion of the international search	Date of mailing of the international search report
25 June 2007	04/07/2007

Name and mailing address of the ISA/	Authorized officer
European Patent Office, P.B. 5818 Patentlaan 2 NL – 2280 HV Rijswijk Tel. (+31–70) 340–2040, Tx. 31 651 epo nl, Fax: (+31–70) 340–3016	Schölvinck, Thérèse

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INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No
PCT/NL2007/000049

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
WO 2006037143 A	13-04-2006	AT 501444 A1	15-09-2006
US 5309651 A	10-05-1994	NONE	
NL 1029372 C2	02-01-2007	NONE	