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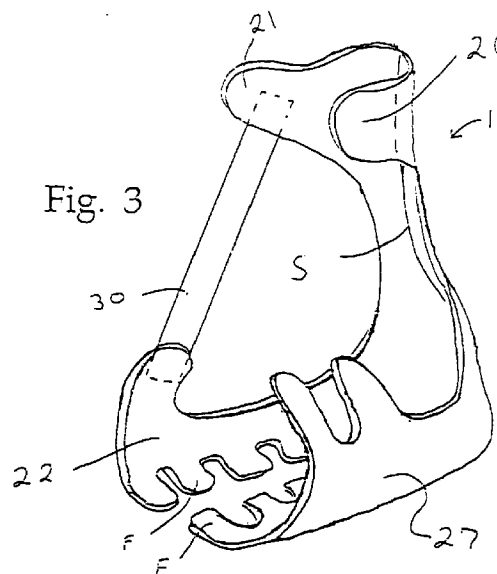
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(54) **A snowboard boot having an asymmetrical support member**

(57) The present invention relates to a snowboard boot having a support member 11 that is asymmetrical. The support member 11 has inner and outer sides, each side having an upper 21, 26 and a lower 22, 27 portion. The outer side is generally larger than the inner side. The inner side includes a strap portion 30 which extends within the boot from the upper portion 21 to the lower portion 22 of the inner side. The configuration of the strap portion 30 and the support member 11 provides the boot with rigidity in response to forces due to leaning toward the outer side of the boot and flexibility in response to leaning toward the inner side.



EP 0 948 910 A2

Description

[0001] The present invention relates to snowboard boot having an asymmetrical support member and in particular to a support member which provides flexibility to the boot in response to leaning in one direction but rigidity in response to leaning in an opposite leaning direction.

[0002] Snowboard boots are highly specialized footwear which provide specific foot and leg support for maneuvering a snowboard. When riding a snowboard, movement control, such as steering and braking, are effected by leaning in specific directions such that the snowboard engages snow to guide the rider in a desired direction. For instance, in order to turn in a specific direction, the snowboarding enthusiast must lean in that direction so that the snowboard tilts in that direction.

[0003] Typically, a person riding a snowboard wears snowboard boots that are designed to be rigidly connected to the snowboard. The front of the persons body is usually oriented at a ninety degree angle with respect to the front end of the snowboard with the boots similarly oriented and mounted on the snowboard. For example, a persons left side may be facing forward when mounted on the snowboard, In this orientation, the person must lean backward to effect a left hand turn and must lean forward to effect a right hand turn. Various other movements are likewise required for maneuvering the snowboard.

[0004] The requirements of the snowboard boots are such that when a snowboard rider leans in any given direction, the boots must transmut that leaning movement to the snowboard. Therefore, the snowboard boots must be rigid with respect to the leaning directions.

[0005] For the purpose of proper orientation, the following relative relationships are given. With respect to the snowboard boots, there is an inner side and an outer side. For instance, the inner side is defined as the left side of the right hand boot. Likewise, the inner side is also defined as the right side of the left boot. The outer side is defined as the left side of the left boot and the right side of the right boot. The respective inner and outer sides of a snowboard boot ideally should not have the same rigidity. As the sophistication of snowboarding developed, snowboarders have become aware that the inner side of the boot should be flexible such that the boot may accommodate a lean toward the inner side. Further, the ideal situation would be to have inner side be flexible at all times. The outer side should be rigid in leaning toward the inner side and the outer side should be rigid when leaning toward the outer side.

[0006] Some snowboard boots provide an angled strap on the outer side of the boot which provides the inner and outer sides with rigidity when leaning against the length of the strap but do not provide the outer side with rigidity when leaning toward the inner side.

[0007] One object of the invention is to provide an

inner side of a snowboard boot with rigidity when leaning toward the outer side and flexibility when leaning toward the inner side.

[0008] In accordance with one aspect of the present invention, an article of footwear includes a sole portion made of a sole forming material having a fastening mechanism incorporated therein. An upper portion is adhered to the sole portion. The upper portion is formed with an outer layer, a support member and an inner liner with the support member being layered between the outer layer and the inner liner. The support member has an inner side and an outer side. The inner side corresponding to an inner ankle side, and the outer side corresponding to an outer ankle side. The inner side and the outer side is asymmetrical with respect to one another. The support member further includes a strap portion that extends between a lower portion of the inner side and the upper portion of the inner side. The strap portion provides tensile force rigidity between the lower and upper portions of the inner side and flexibility in response to compressive force.

[0009] Preferably, an upper portion of the inner side and an upper portion of the outer side of the support member is formed with a slit therebetween having a predetermined width, edges of the slit being fixed to one another such that an arc shaped portion is defined between the upper portion of the inner side and the upper portion of the outer side, the arc shaped portion forming an arched shape to a back side of upper portion

[0010] Preferably, the edges of the slit are joined by stitching.

[0011] Alternatively, the edges of the slit are joined by an adhesive.

[0012] Alternatively, the edges of the slit are joined by bonding.

[0013] Preferably, the strap portion provides rigidity in response to leaning toward the outer side and flexibility in response to leaning toward the inner side.

[0014] In accordance with another aspect of the present invention, an article of footwear includes a sole portion made of a sole forming material. The sole portion has a fastening mechanism incorporated therein. An upper portion is adhered to the sole portion. The upper portion is formed with an outer layer, a support member and an inner liner with the support member being layered between the outer layer and the inner liner. The support member has an inner side and an outer side, the inner side corresponding to an inner ankle side, and the outer side corresponding to an outer ankle side. The inner side and the outer side are asymmetrical with respect to one another. An upper portion of the inner side and an upper portion of the outer side are formed with a slit therebetween having a predetermined width. Edges of the slit are fixed to one another such that an arc shaped portion is defined between the upper portion of the inner side and the upper portion of the outer side. The support member further includes a generally flexible strap portion extending between a lower

portion of the inner side and the upper portion of the inner side, the flexible strap portion providing tensile force rigidity between the lower and upper portions of the inner side and flexibility in response to compressive force.

[0015] Preferably, the edges of the slit are joined by stitching.

[0016] Alternatively, the edges of the slit are joined by an adhesive.

[0017] Alternatively, the edges of the slit are joined by bonding.

[0018] Preferably, the strap portion provides rigidity in response to leaning toward the outer side and flexibility in response to leaning toward the inner side.

[0019] These and other objects, features, aspects and advantages of the present invention will become more fully apparent from the following detailed description of the present invention when taken in conjunction with the accompanying drawings where like reference numerals denote corresponding parts throughout.

Fig. 1 is a side view of an inner side of a snowboard boot, the boot having a support member in accordance with the present invention;

Fig. 2 is a view of the support member shown removed from the snowboard boot, and laid out flat;

Fig. 3 is a perspective view of the support member with the boot removed to provide greater clarity;

Fig. 4 is a side view of the support member, looking at the outer side of the support member;

Fig. 5 is a side view of the support member, looking at the inner side of the support member;

FIG. 6 is a perspective view of the sole portion of the snowboard boot shown in figure 1; and

FIG. 7 is a cross section view of the sole and cleat shown in FIG. 6.

[0020] A snowboard boot 1 is depicted in Fig. 1 in accordance with one embodiment of the present invention. The snowboard boot 1 is an article of footwear and includes a sole portion 2 that is made of a sole forming material. The sole portion 2 has a fastening mechanism 2a incorporated therein. The fastening mechanism 2a is described in greater detail in co-pending U.S. Patent Application, Serial Number 08/914,949, filed August 20, 1997, which is commonly assigned herewith. U.S. Patent Application, Serial Number 08/914,949, filed August 20, 1997 is incorporated herein by reference in its entirety.

[0021] The fastening mechanism 2a for the purpose of

attaching the boot 1 to a snowboard 58 is illustrated in figures 7 and 8. In these figures there is shown a sole 53 equipped with an elastic out-sole 53a, a plate sole 54 made of a plastic plate or the like, a sole surface formed by the elastic out-sole 53a, and a fastener attachment depression 55 formed in this sole surface. As shown in FIGS. 6 and 7, a fastener 56 is attached to the sole 53, and the boot is bound to the snowboard 58 by this fastener 56 and a binding 57 so that the snowboard can be used. Specifically, the fastener 56 is recessed into the depression 55 and fastened by tightening to the plate sole 54 with attachment screws 59 and nuts 59a so that the plate sole 54 will serve as an attachment plate for attaching the fastener 56. With this construction the sole 53 will exhibit excellent fastener attachment strength, yet walking is facilitated because the fastener 56 does not readily touch the ground, while the elastic out-sole 53a around the fastener 56 does touch the ground. The binding 57 is equipped with a front fastener 57a that engages with a front engagement component 56a located at the front end of the fastener 56, and with a rear fastener 57b that engages with a rear engagement component 56b located at the rear end of the fastener 56, and is designed such that the front and rear sides of the sole 53 are fastened to the snowboard 58 through the fastening of the front and rear ends of the fastener 56.

[0022] An upper portion 6 is adhered to the sole portion 2. The upper portion 6 is formed with an outer layer 8, a support member 11 and an inner liner 9 with the support member 11 being layered between the outer layer 8 and the inner liner 9.

[0023] The support member 11, as shown in Figs. 2, 3, 4 and 5, includes an inner side 20 and an outer side 25. The inner side 20 corresponds to an inner ankle side, and the outer side 25 corresponds to an outer ankle side. Specifically, the inner side would therefore correspond to the left side of a right hand boot. Likewise, the inner side would correspond to right side of a left boot. Similarly, the outer the inner side would correspond to right side of a left boot. Similarly, the outer side would correspond to the left side of the left boot and the right side of the right boot. The support member 11 is preferably made of a generally rigid plastic or polymer material, but may alternatively be made of other generally stiff (but slightly bendable) materials.

[0024] In the present invention, and specifically as shown in Fig. 2, the inner side 20 and the outer side 25 are asymmetrical with respect to one another. In Fig. 2, the support portion 11 is removed from the boot 1 and laid out flat. An upper portion 21 of the inner side 20 extends outward as shown in Fig. 2 for connection to a strap 30, which is described in greater detail below. An upper portion 26 of the outer side 25 extends outward in a direction opposite the upper portion 21, with respect to the depiction of the support member 11 in Fig. 2. A lower portion 22 of the inner side 20 and a lower portion 27 of the outer side 25 also extend in opposite direc-

tions, with respect the depiction in Fig. 2.

[0025] In Fig. 3, the support member 11 is shown in perspective, as it would appear within the boot 11, but with the boot 1 removed for clarity. In Fig. 3, the lower portion 22 and the lower portion 27 extend in directions generally parallel to one another to provide strength to the sides of the boot 1. Similarly, the upper portions 21 and 26 extend in a somewhat parallel manner with respect to one another to provide an upper portion of the boot 1 with support.

[0026] The support member 11 is formed at lower edges thereof with fingers F which extend under the area where the foot is placed in the boot 1, between the sole portion 2 and the upper portion 6.

[0027] A slit S is formed between the upper portion 21 and the upper portion 26. The slit may be cut out of the support member or may be formed in a production process as the support member 11 is formed. During assembly of the boot 1, the sides of the slit S are fixed to one another to close the gap G defined by the slit, thus pulling the upper portion 21 and upper portion 26 toward one another. The action of closing the gap G causes the upper portions 21 and 26 to define an arcuate shape A on the back side of the support member 11 and hence the boot 1, as shown in Figs 4 and 5. The fixing of the sides of the slit S and the contour of the arcuate shape A are generally desirable for providing a rigid back for the boot 1. A rigid back for the boot 1 is necessary for leaning operations of a snowboarder when riding a snowboard.

[0028] The support member further includes the strap portion 30 which extends between lower portion 22 of the inner side 20 and the upper portion 21 of the inner side 20. The strap portion 30 provides tensile force rigidity between the lower and upper portions 22 and 21 of the inner side 20 and flexibility in response to compressive force. The strap portion 30 may be made of any of a variety of materials, such as textile, plastic or the like. The strap portion 30 may be fixed to the upper portion 21 and lower portion 22 by any of a variety of means, such as stitching, adhesive, or heat bonding with the material which forms the support member 11. Similarly, the slit S may be closed, with the sides fixed to one another by a variety of means such as stitching, joining by an adhesive or joining by heat bonding.

[0029] One of the main purposes of the strap portion 30 is to provide the boot 1 with rigidity in response to leaning toward the outer side and flexibility in response to leaning toward the inner side, as is described in greater detail below.

[0030] When a snowboarder is riding a snowboard and is wearing boots such as the boot 1, the snowboarder leans in various directions in order to steer. The snowboarder is fixed to the snowboard by the boots, such as boots 1, with the boots extending in a direction generally perpendicular to the length of the snowboard. Leaning backward, with respect to the direction of the boots, causes the snowboard to turn in one direction.

Leaning forward, with respect to the boots, causes the snowboard to turn in an opposite direction. Leaning to the left or right, with respect to the direction of the boots, provides a variety of steering and maneuvering effects. It is desirable for the boots to be responsive to the needs of the snowboarder, specifically to transmit specific body movements from the snowboarder, through the boots and to the snowboard. The stiffness provided by the joined slit S gives rigidity to the back side of the boot 1 making it possible for the leaning backward movement of the snowboarder to be transferred to the snowboard. The snowboarder may lean to a right side and to a left side (with respect to the boot 1).

[0031] In such movements, it is desirable for the boot 1 to be rigid when leaning toward the outer side 27 of the boot 1. The strap portion 30 and the thickness of an upright portion 28 of the outer side 25 assures the rigidity of the boot 1. When leaning toward the inner side 20 of the boot 1, flexibility is desirable. A smaller upright portion 23 of the inner side 20 and the flexibility of the strap portion 30 allow for flexibility when leaning toward the inner side 20.

[0032] In the above description, the support member 11 of the boot 1 was described with respect to inner and outer sides. It should therefore be understood that, although only one boot is described, the description refers to symmetrical right and left boots, each boot having an inner and an outer side.

[0033] Summarized, the present invention relates to a snowboard boot having a support member that is asymmetrical. The support member has inner and outer sides, each side having an upper and a lower portion. The outer side is generally larger than the inner side. The inner side includes a strap portion which extends within the boot from the upper portion and the lower portion of the inner side. The configuration of the strap portion and the support member provides the boot with rigidity in response to forces due to leaning toward the outer side of the boot and flexibility in response to leaning toward the inner side.

[0034] Various details of the invention may be changed without departing from its spirit nor its scope. Furthermore, the foregoing description of the embodiments according to the present invention is provided for the purpose of illustration only, and not for the purpose of limiting the invention as defined by the appended claims and their equivalents.

Claims

1. An article of footwear comprising:

a sole portion (2) made of a sole forming material, said sole portion having a fastening mechanism (2a) incorporated therein;
an upper portion (6) adhered to said sole portion (2), said upper portion (6) formed with an outer layer (8), a support member (11) and an

inner liner (9) with said support member (11) being layered between said outer layer (8) and said inner liner (9), said support member (11) having:

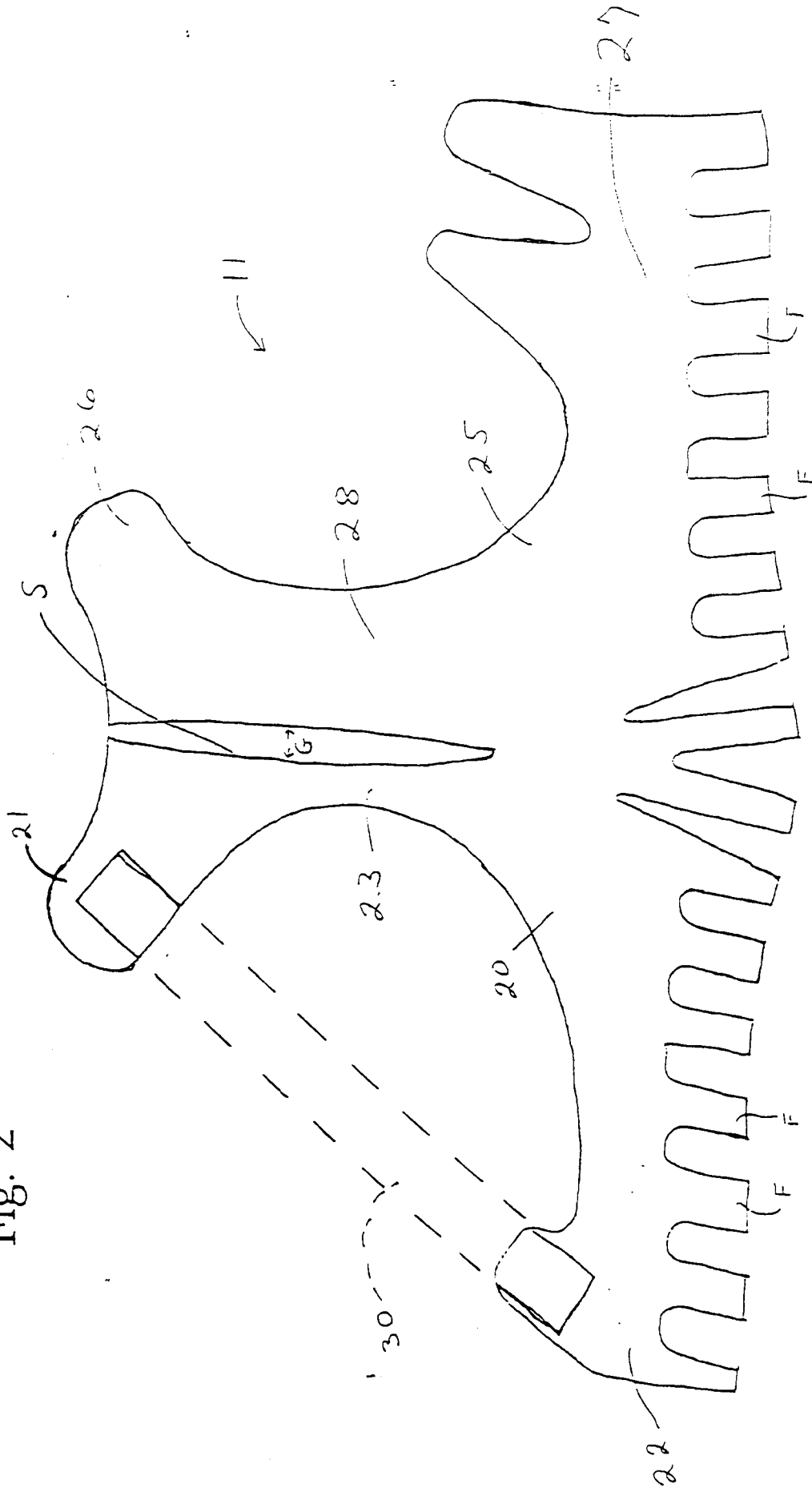
an inner side (20) and an outer side (25), said inner side (20) corresponding to an inner ankle side, and said outer side (25) corresponding to an outer ankle side;
 said inner side (20) and said outer side (25) being asymmetrical with respect to one another; and
 said support member (11) further includes a strap portion (30) extending between a lower portion (22) of said inner side (20) and said upper portion (21) of said inner side (20), said strap portion (30) providing tensile force rigidity between said lower and upper portions (22, 21) of said inner side (20) and flexibility in response to compressive force.

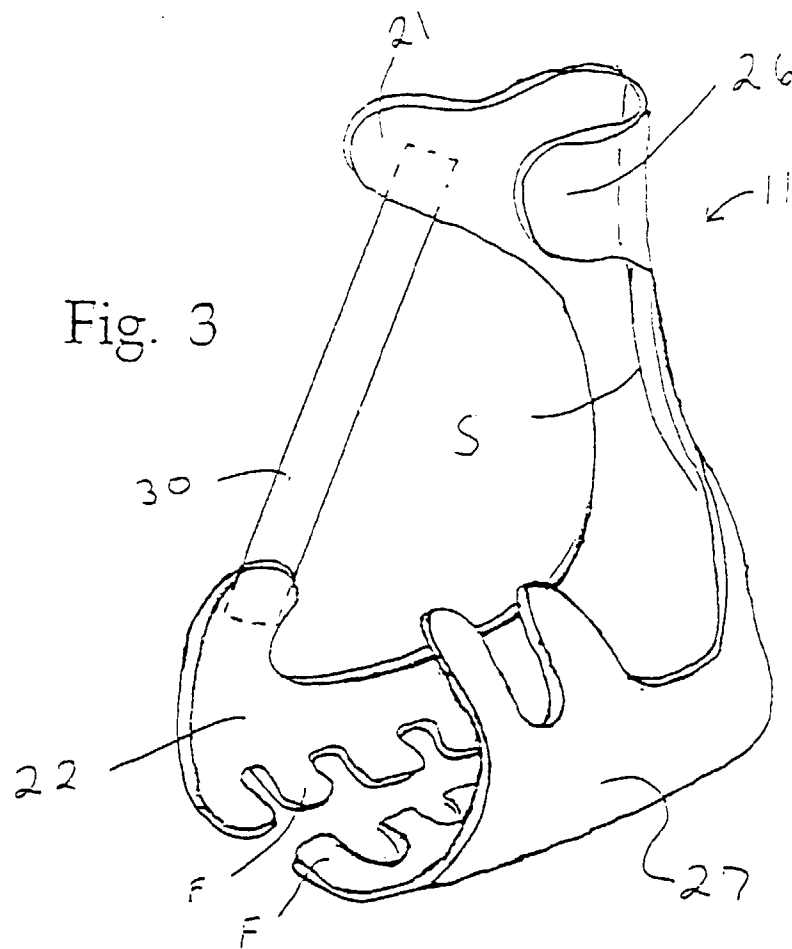
2. The article of footwear according to claim 1, characterized in that an upper portion (21) of said inner side (20) and an upper portion (26) of said outer side (25) of said support member (11) is formed with a slit (S) therebetween having a predetermined width (G), edges of said slit being fixed to one another such that an arc shaped portion is defined between said upper portion (21) of said inner side (20) and said upper portion (26) of said outer side (25), said arc shaped portion forming an arched shape to a back side of upper portion.
3. The article of footwear according to claim 2, characterized in that said edges of said slit (S) are joined by stitching.
4. The article of footwear according to claim 2 or 3, characterized in that said edges of said slit (S) are joined by an adhesive.
5. The article of footwear according to one of claims 2 to 4, characterized in that said edges of said slit (S) are joined by bonding.
6. The article of footwear according to one of claims 1 to 5, characterized in that said strap portion (30) provides rigidity in response to leaning toward said outer side (25) and flexibility in response to leaning toward said inner side (20).
7. The article of footwear according to one of claims 1 to 6, characterized in that said strap portion (30) is a generally flexible strap portion.

Fig. 1



Fig. 2





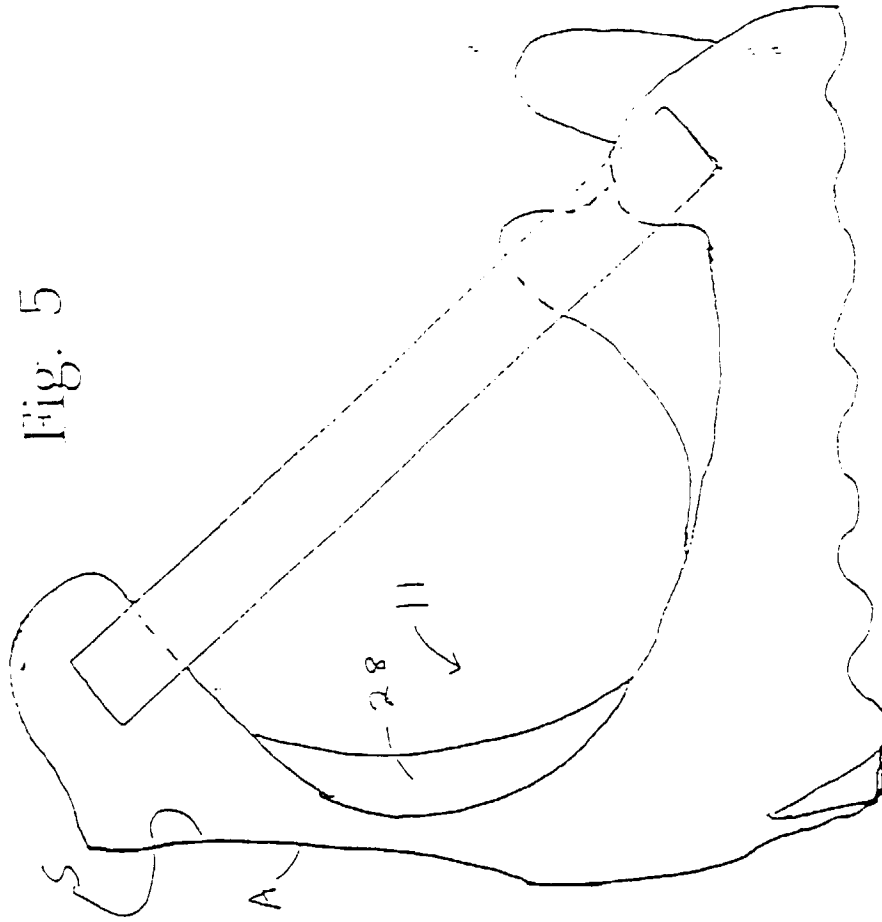


Fig. 5

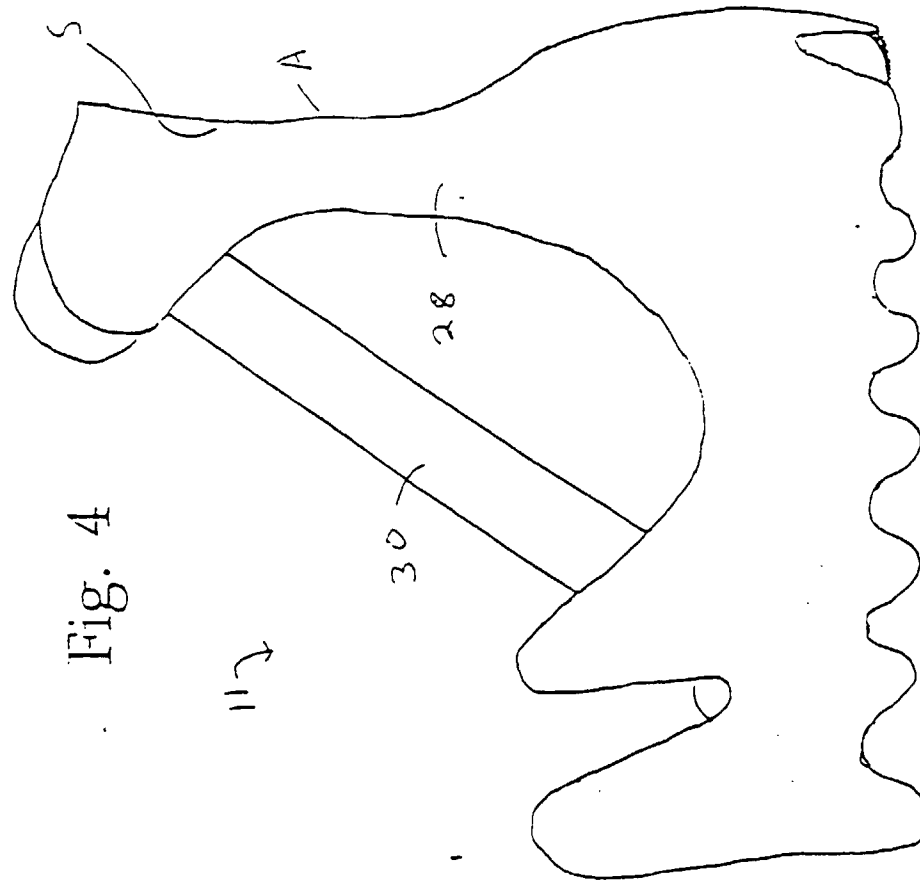


Fig. 4

FIG. 6

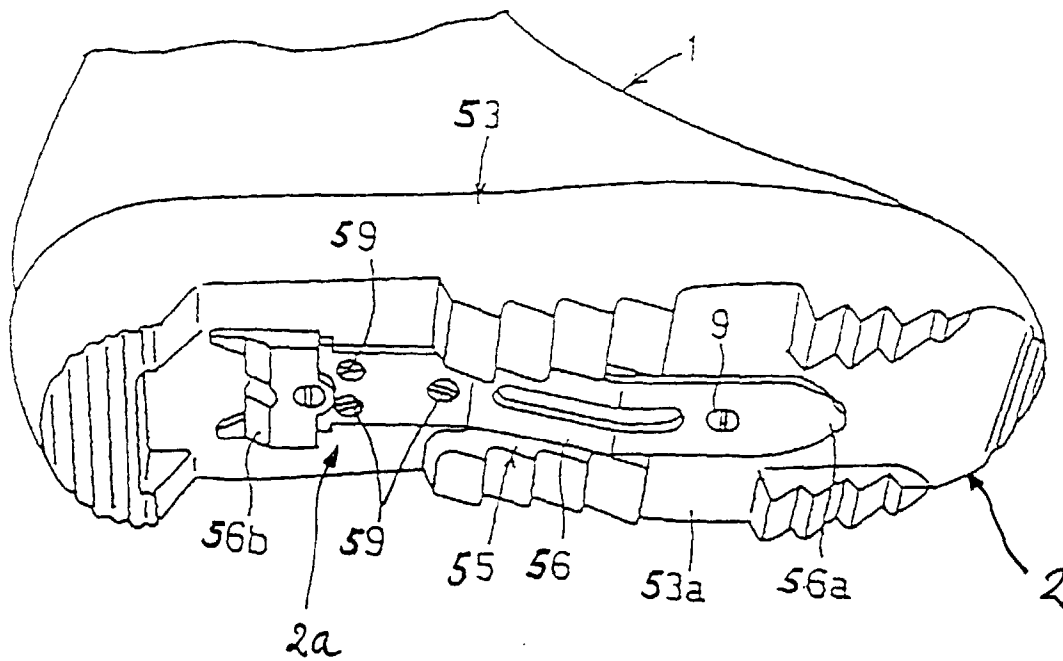


FIG. 7

