



US 20040231200A1

(19) **United States**

(12) **Patent Application Publication**  
Forrest et al.

(10) **Pub. No.: US 2004/0231200 A1**

(43) **Pub. Date: Nov. 25, 2004**

(54) **FRAME AND BINDING FOR A SNOWSHOE, AND RELATED SYSTEMS AND METHODS**

**Publication Classification**

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(51) **Int. Cl.<sup>7</sup> ..... A43B 5/04; A43B 5/16**

(52) **U.S. Cl. .... 36/122; 36/125**

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**ABSTRACT**

A snowshoe includes a lightweight frame that provides traction and maintains the snowshoe's shape when traveling over at least one of the following surfaces: snow, hard-packed snow and ice, and a binding to fasten the snowshoe to a boot with a gloved hand. The frame includes a peripheral component having a length, a height orthogonal to the length, and a width orthogonal to the height and at least two times shorter than the height at all locations along the height. The binding includes a strap, and a retention element coupleable with the strap. The retention element includes a body defining a main passage in which the strap is disposed when coupled with the retention element, an access passage through which the strap passes to enter the main passage, and a locking element to secure the strap to the retention element.

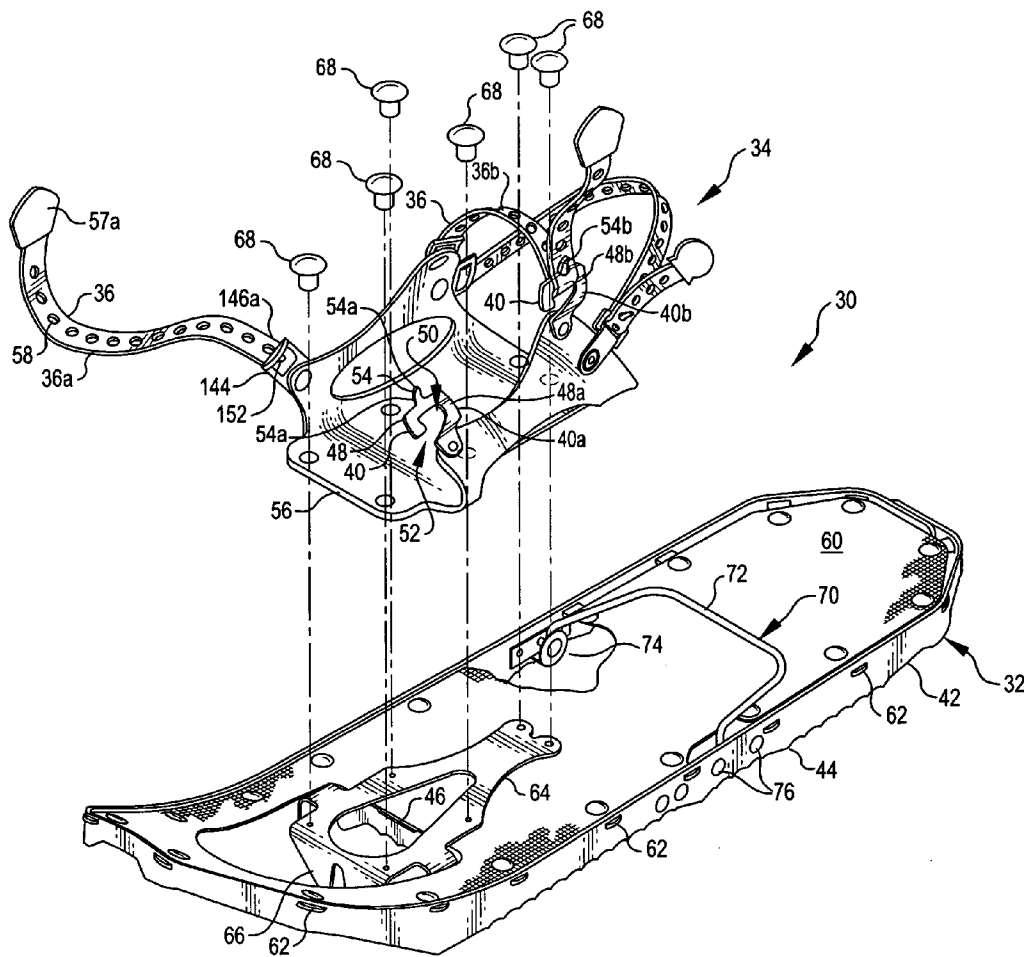
(21) Appl. No.: **10/877,736**

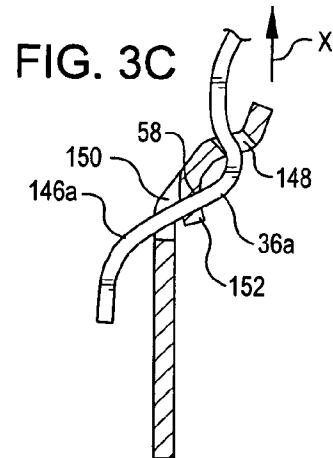
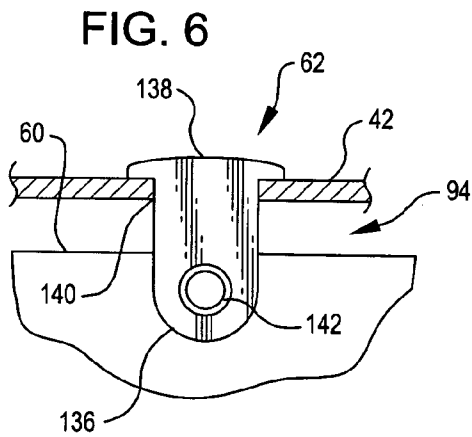
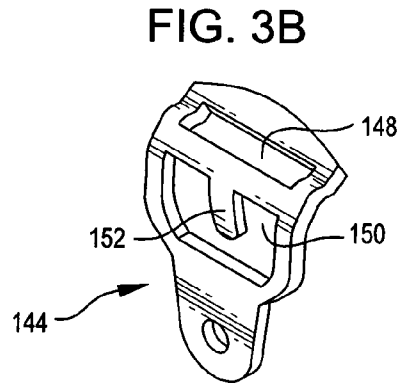
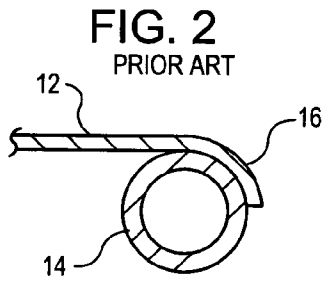
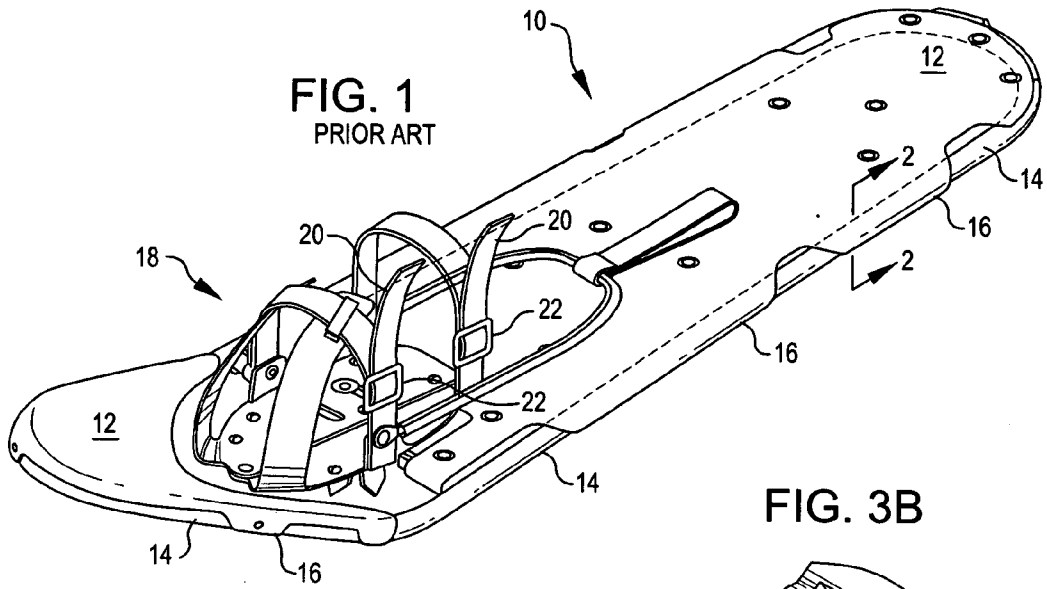
(22) Filed: **Jun. 25, 2004**

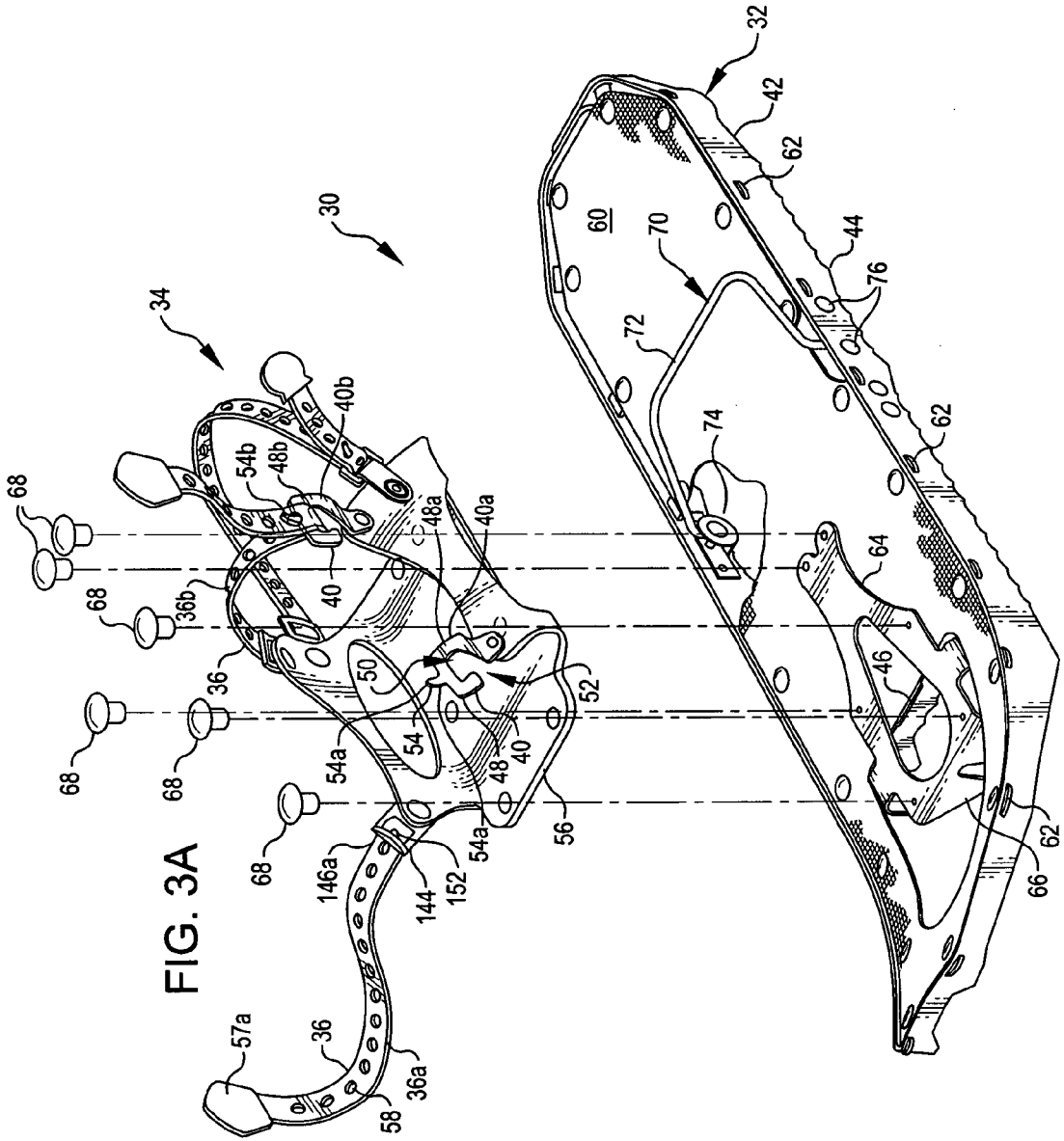
**Related U.S. Application Data**

(63) Continuation of application No. PCT/US04/02845, filed on Jan. 29, 2004.

(60) Provisional application No. 60/444,331, filed on Jan. 30, 2003.







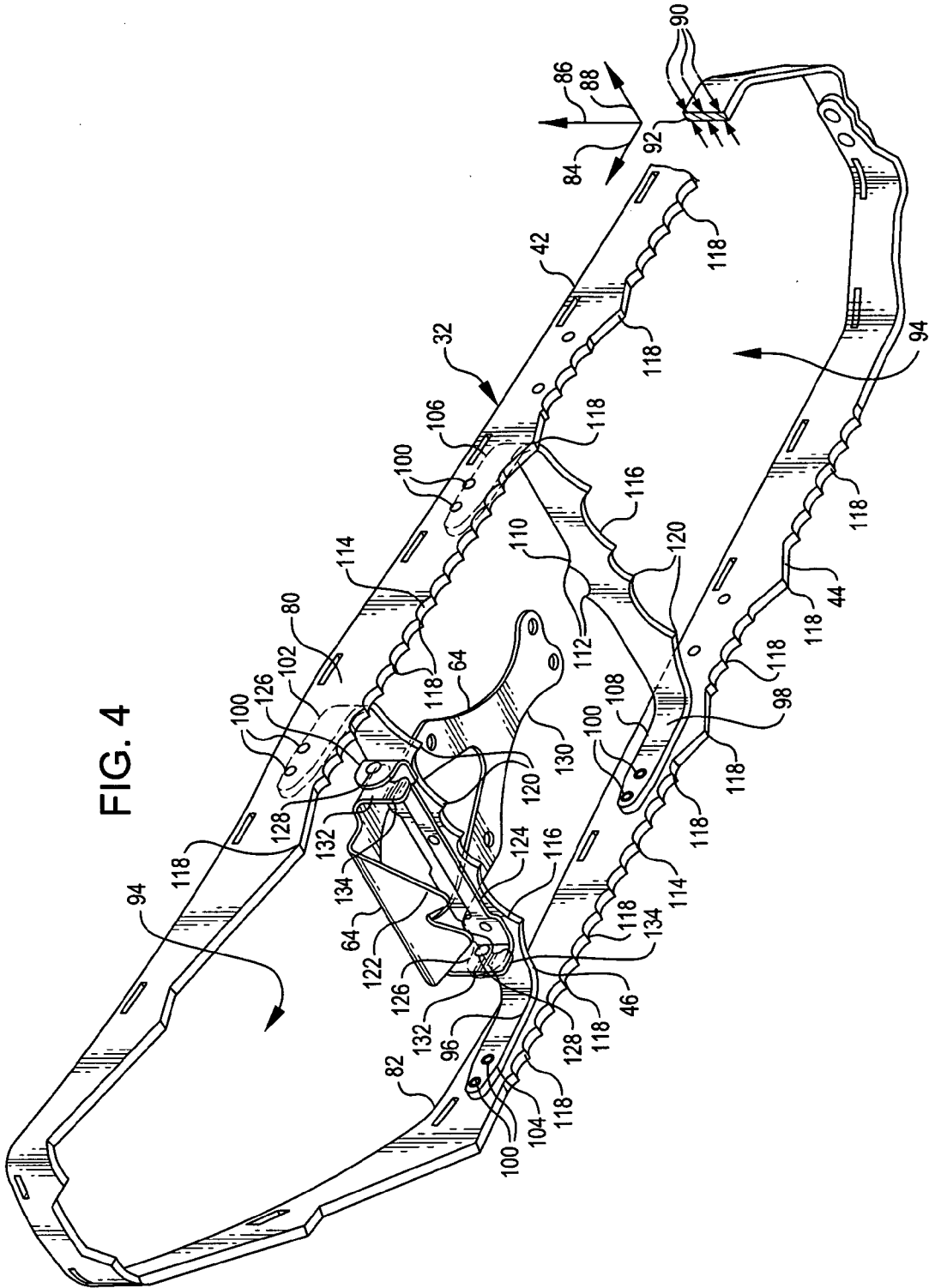
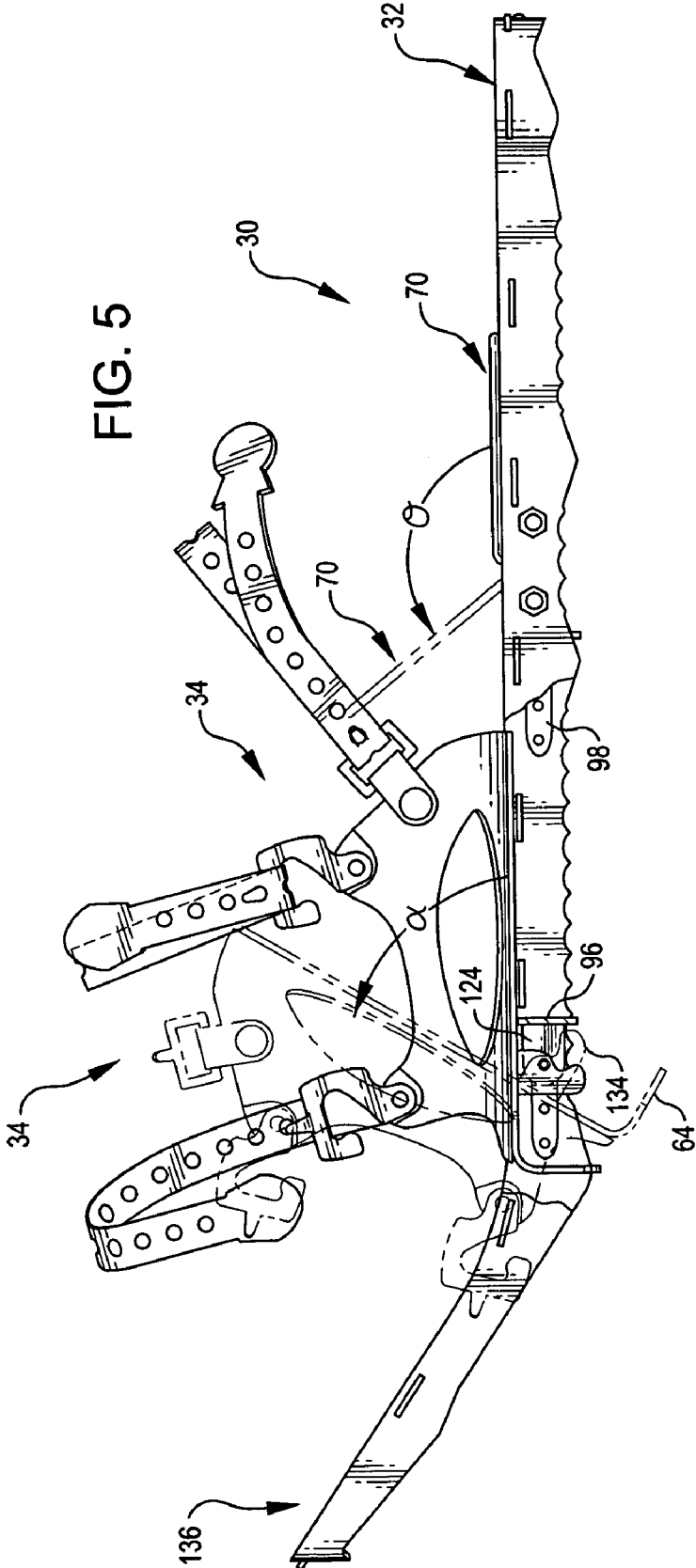
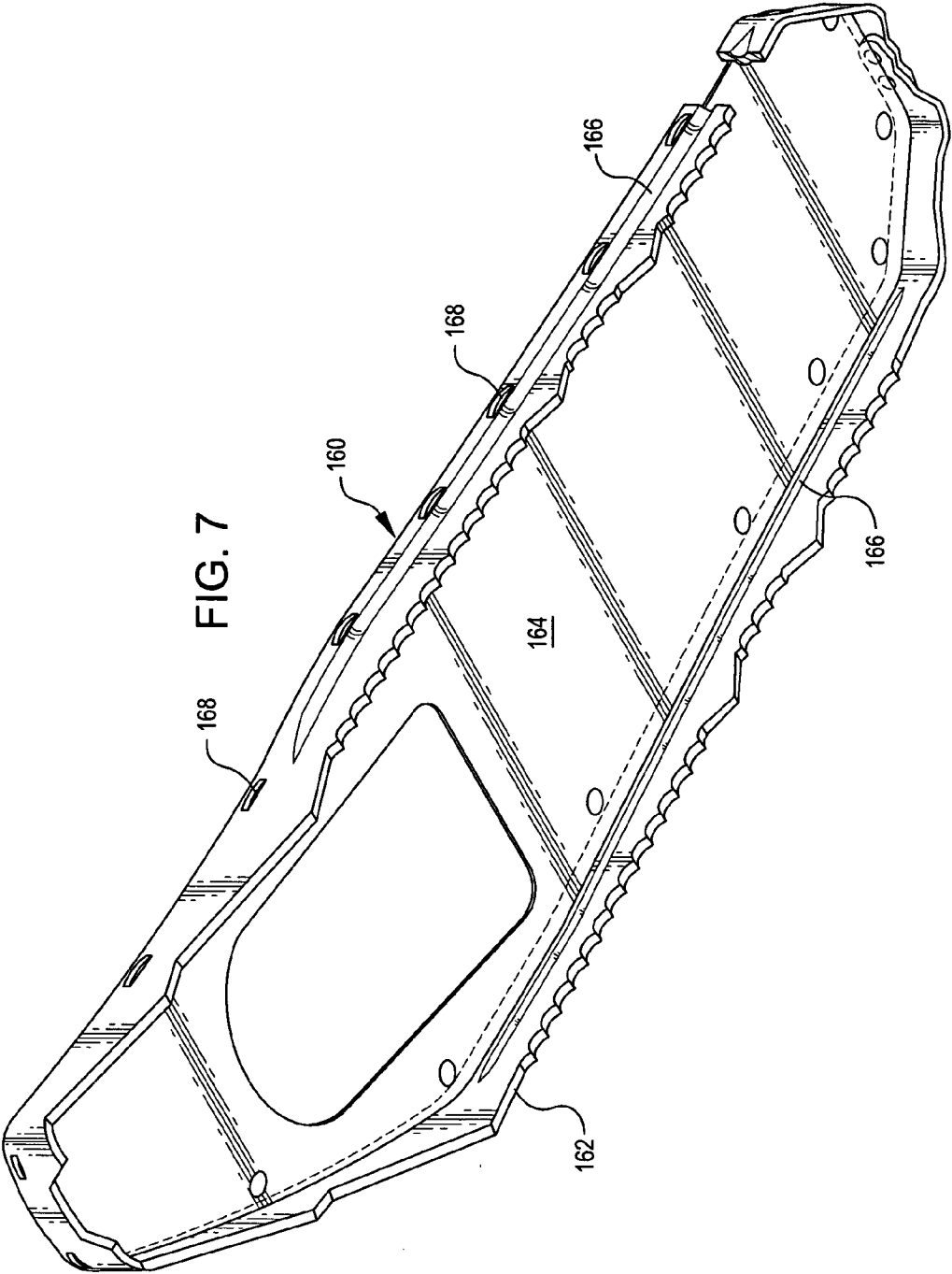


FIG. 4

FIG. 5





## FRAME AND BINDING FOR A SNOWSHOE, AND RELATED SYSTEMS AND METHODS

### CROSS-REFERENCE TO RELATED APPLICATIONS

[0001] This application is a continuation of the PCT Application No. PCT/US04/02845, titled FRAME AND BINDING FOR A SNOWSHOE, AND RELATED SYSTEMS AND METHODS, and filed 29 Jan. 2004, which is herein incorporated by reference, that claims priority from U.S. Provisional Patent Application No. 60/444,331, titled WhiteLighting Snowshoe, and filed 30 Jan. 2003. This application claims the benefit of the filing date of the PCT application under 35 USC §120. This application also claims priority from the U.S. Provisional Patent Application No. 60/444,331, which is hereby incorporated by reference in its entirety.

### BACKGROUND

[0002] Many people use snowshoes to facilitate travel in rugged backcountry during the winter when snow typically blankets the terrain. Depending on the latitude and elevation of the backcountry, snow can frequently accumulate to a depth of a foot or more. At such depths travel can be very difficult because one's foot typically penetrates the snow a foot or more, which causes one to spend much energy lifting one's foot out of the hole to take another step. Thus, many people mount a snowshoe to each foot when traveling such terrain to buoy one's foot toward the surface of the snow, i.e. prevent one's foot from penetrating the snow more than about six inches.

[0003] FIG. 1 is a perspective view of a conventional snowshoe 10. The snowshoe 10 includes a deck 12 to disperse one's weight over an area of the snow's surface (not shown) that is larger than the area of one's footprint, and a frame 14 to support one's weight and to prevent the deck from substantially deforming when dispersing one's weight. The deck 12 is typically fastened to the frame 14 by wrapping a tab 16 of the deck 12 around a portion of the frame 14 as shown in FIG. 2 and fastening the tab 16 to the frame 14. The frame's cross-section is typically round, and may be hollow such as a tube's as shown in FIG. 2, or solid, such as bar's, to provide the frame 14 with the desired strength and stiffness to support one's weight and to prevent the deck 12 from deforming. The snowshoe 10 also includes a binding 18 to fasten the snowshoe 10 to the boot (not shown) on one's foot. The binding 18 is typically mounted to the frame 14 and includes a strap 20 and buckle 22 that can be releasably coupled together to allow one to securely fasten and remove the snowshoe 10 from one's boot. The strap 20 and buckle 22 also allow one to fasten the snowshoe 10 to different sized boots.

[0004] Unfortunately, the snowshoe 10 has some problems. Although the snowshoe 10 may work well in powder snow, the snowshoe 10 often fails to provide sufficient traction for traveling over snow, hard-packed snow and ice. When traveling over snow, hard-packed snow and ice the frame 14 often fails to penetrate the surface, and thus much of the snowshoe's contact with the surface is made with the frame 14. Because the frame 14 has a round or square cross-section, the frame 14 can easily slide across the surface, which makes traversing across a hill's slope,

ascending a hill or descending a hill difficult when the surface of the hill includes snow, hard-packed snow or ice.

[0005] Another problem with the snowshoe 10 is that the binding 18 is often difficult to operate with gloved hands. To fasten the snowshoe 10 to one's boot, one may remove the strap 20 from the buckle 22 to allow one to easily drop one's boot into the binding 18. But one must then thread the strap 20 back through the buckle 22 to fasten the snowshoe 10 to the boot. With gloved hands this is often difficult and frustrating. Another way to fasten the snowshoe 10 to one's boot may be to move the buckle 22 toward the end of the strap 20 without removing the buckle 22 from the strap 20. But one must then slide one's boot into the binding 16. This is often difficult and frustrating because the strap having the buckle 22 may snag on one's boots and gators that are often worn with snowshoes.

### SUMMARY

[0006] In one aspect of the invention, a frame for a snowshoe includes a peripheral component that provides traction and maintains the snowshoe's shape when traveling over at least one of the following surfaces: snow, hard-packed snow and ice. The peripheral component includes a length, a height orthogonal to the length, and a width orthogonal to the height and at least two times shorter than the height at all locations along the height. With a width that is at least 2 times shorter than the height, the peripheral component can provide a contact surface on hard-packed snow or ice that is less than the contact surface provided by conventional snowshoe frames, and thus provide traction. And the peripheral component can prevent the snowshoe from substantially deforming when one uses the snowshoe to travel over at least one of the following surfaces, snow, hard-packed snow and ice. In addition, the peripheral component allows the frame to be lighter than conventional snowshoe frames.

[0007] In another aspect of the invention, the frame may include a cross-member component to support the peripheral component. The cross-member component may extend from a first portion of the peripheral component toward a second portion of the peripheral component. Alternatively or additionally, the frame may include a stiffener that may include a curved region of the peripheral component to stiffen the peripheral component.

[0008] In yet another aspect of the invention, a binding for a snowshoe includes a strap, and a retention element coupleable with the strap to fasten the snowshoe to a boot. The retention element includes a body defining a main passage in which the strap is disposed when coupled with the retention element, an access passage through which the strap passes to enter the main passage, and a locking element to secure the strap to the retention element. With the access passage, the strap may be easily inserted into the main passage with a gloved hand to couple the retention element with the strap.

### BRIEF DESCRIPTION OF THE FIGURES

[0009] FIG. 1 is a perspective view of a conventional snowshoe.

[0010] FIG. 2 is a cross-section of a portion of the frame and deck incorporated in the snowshoe of FIG. 1.

[0011] FIG. 3a is a perspective, partially exploded view of a snowshoe incorporating a frame and a binding according to an embodiment of the invention.

[0012] FIG. 3*b* is a perspective view of an anchor incorporated in the binding in FIG. 3*a*, according to an embodiment of the invention.

[0013] FIG. 3*c* is a cross-sectional view of the anchor in FIG. 3*b*, according to an embodiment of the invention.

[0014] FIG. 4 is a perspective view of the frame incorporated in the snowshoe of FIG. 3, according to an embodiment of the invention.

[0015] FIG. 5 is a side view of the snowshoe in FIG. 3.

[0016] FIG. 6 is a plan view of a deck clip incorporated in the snowshoe of FIG. 3.

[0017] FIG. 7 is a perspective view of a frame according to another embodiment of the invention.

#### DETAILED DESCRIPTION

[0018] The following discussion is presented to enable one skilled in the art to make and use the invention. Various modifications to the disclosed embodiments will be readily apparent to those skilled in the art, and the generic principles herein may be applied to other embodiments and applications without departing from the spirit and scope of the present invention as defined by the appended claims. Thus, the present invention is not intended to be limited to the embodiments shown, but is to be accorded the widest scope consistent with the principles and features disclosed herein.

[0019] FIG. 3 is a perspective, partially exploded view of a snowshoe 30 incorporating a frame 32 and a binding 34 according to an embodiment of the invention. The frame 32 provides traction and maintains the snowshoe's shape when traveling over at least one of the following surfaces (not shown): snow, hard-packed snow and ice. Thus, one may use the snowshoe 30 to traverse terrain that includes at least one of these surfaces. For example, one may use the snowshoe 30 to traverse across an icy slope of a hill, to ascend an icy slope of a hill, or to descend an icy slope of a hill. The binding 34 (discussed in greater detail elsewhere in conjunction with FIG. 3) includes a strap 36 and a retention element 40 that allows one to couple the strap 36 with the retention element 40 and to uncouple the strap 36 from the retention element 40, without removing one's gloves. Thus, one may easily fasten and release the snowshoe 30 to and from one's boot.

[0020] The frame 32 includes a peripheral component 42 having a geometry (discussed in greater detail in conjunction with FIG. 4) that provides a contact surface 44 on hard-packed snow or ice that is less than the contact surface provided by conventional snowshoe frames, and thus provides traction. In addition, the peripheral component's geometry prevents the snowshoe 30 from substantially deforming when one uses the snowshoe 30 to traverse snowy or icy terrain. The frame 32 may also include a cross-member component 46 (discussed in greater detail in conjunction with FIG. 4) to support the peripheral component 42, or the frame 32 may not. Alternatively or additionally, the frame 32 may include a stiffener (not shown but discussed in greater detail in conjunction with FIG. 7) to stiffen the peripheral component 42; or the frame 32 may not.

[0021] The strap 36 of the binding 34 is coupleable with the retention element 40 to fasten the snowshoe 30 to a boot.

The retention element 40 includes a body 48 that defines a main passage 50 in which the strap 36 is disposed when the strap 36 is coupled with the retention element 40; an access passage 52 through which the strap 36 may pass when one inserts the strap 36 into the main passage 50, and a locking element 54 to secure the strap 36 to the retention element 40.

[0022] In one embodiment, the binding 34 may encircle a portion of one's boot to fasten the snowshoe 30 to the boot. The binding 34 may include a matt 56, a first strap 36*a* that extends from the matt 56 and a second strap 36*b* that also extends from the matt 56. The binding 34 may also include a first retention element 54*a* that may be coupled with the strap 36*a* to fasten the snowshoe 30 to a boot, and a second retention element 54*b* that may be coupled with the strap 36*b* to fasten the snowshoe 30 to a boot. Each retention element 54*a* and 54*b* may include a respective body 48*a* and 48*b* that includes a hook and from which a respective locking element 54*a* and 54*b* extends.

[0023] In operation, one may fasten the snowshoe 30 to one's boot by positioning the straps 36*a* and 36*b* to extend away from their respective retention element 40*a* and 40*b*. Then, one may place one's boot into the binding by stepping onto the matt 56. Next, one may insert the strap 36*a* through the access passage 52*A* of the retention element 40*a* to position the strap 36*a* in the main passage 50*A*. Next, one may pull on the end 57*a* of the strap 36*a* to tighten the strap 36*a* and matt 56 around a portion of one's boot. Then, one may insert the locking element 54*A* through a hole 58 in the strap 36*a* to secure the strap 36*a* to the retention element 40*a* as shown by the coupling of the strap 36*b* and retention element 40*b* in FIG. 3. With the locking element 54*A* extending through a hole 57 in the strap 36*a*, the locking element 54*A* prevents the strap 36*a* from sliding relative to the retention element 40*a*. To release the strap 36*a* from the retention element 40*a*, one withdraws the locking element 54*A* from the hole 57 and removes the strap 36*a* from the main passage 50*A*. The strap 36*b* and retention element 40*b* may also be coupled and uncoupled in a similar manner to fasten and release the snowshoe 30 to one's boot.

[0024] Referring to FIGS. 3*b* and 3*c* as well as FIG. 3*a*, the binding 34 may also include an anchor 144 to fasten the strap 36*a* to the matt 56. The anchor 144 helps position the strap 36*a* to extend away from the retention element 40*a*, and thus facilitates fastening and releasing one's boot from the snowshoe as discussed above. In addition, the anchor 144 allows one to easily adjust the length of the strap 36*a* that one may use to couple with the retention element 40. In one embodiment, the anchor 144 includes a first passage 148, a second passage 150 and a protrusion 152 to prevent the strap 36*a* from moving in the X direction. To fasten the strap 36*a* to the matt 56, one inserts the end 146*a* through the first passage 148, around the protrusion 152 and through the second passage 150. Then, one aligns the protrusion 152 with a desired one of the strap's holes 58 and inserts the protrusion 152 into the hole 58. With the protrusion inserted into the hole 58 the strap 36*a* is prevented from moving in the X direction. The binding 34 may include additional anchors 144 to fasten respective other straps, such as strap 36*b*.

[0025] Still referring to FIG. 3, the snowshoe 30 may also include a deck 60 to buoy the snowshoe 30 on a surface of snow. In one embodiment, the deck 60 may be made of any

desired material and may be coupled with the peripheral component 42 using any desired fastening technique. For example, the deck 60 may be made of a flexible material such as urethane-coated nylon or other plastic coated cloths, and deck clips 62 (discussed in greater detail in conjunction with FIG. 6) may couple the deck 60 with the peripheral component 42. In other embodiments, the deck 60 may be made of a stiff material such as hard plastic or metal, and conventional fasteners such as rivets, bolts or adhesives may couple the deck 60 with the peripheral component 42.

[0026] The snowshoe 30 may also include a crampon 64 to improve the snowshoe's traction and to provide a mount for the binding 34. In one embodiment, the crampon 64 may include a protrusion 66 to contact the surface of the terrain. The crampon 64 may also be pivotally mounted to the cross-member component 46 (discussed in greater detail in conjunction with FIG. 4), and the binding 34 may be mounted to the crampon 64 using any desired fastening technique. For example, the binding 34 may be mounted to the crampon 64 with rivets 68. In other embodiments, the crampon may be pivotally mounted to the deck 60 using any desired fastening technique such as a strap. This may be desirable when the deck 60 is stiff to reduce weight. Also, in other embodiments, the binding 34 may be fastened with removable fasteners, such bolts and nuts, to allow one to replace the binding 34 with a similar one when the binding 34 is damaged or with a different binding as desired. When pivotally mounted to the cross-member component 46, the crampon 64 and binding 34 may rotate relative to the cross-member component 46 between two positions (discussed in greater detail in conjunction with FIG. 5) to allow one's foot to rotate relative to the snowshoe 30 as one walks. Thus, much of the frame's contact surface 44 can remain in contact with the surface of the terrain while the snowshoe 30 bears one's weight.

[0027] Still referring to FIG. 3, the snowshoe 30 may include a televator 70 to help one ascend a hill. In one embodiment, the televator 70 may include a bar 72 that may be pivotally fastened to the peripheral component 42 and held in an extended position (not shown in FIG. 3 but shown in FIG. 5) where the bar 72 is suspended above the deck 60. The bar 72 may be made of any desirable material capable of supporting one's weight and may be pivotally fastened to the peripheral component 42 using any desired fastening technique also capable of supporting one's weight. For example, the bar 72 may be made of spring steel, and the televator 70 may include a televator mount 74 that pivotally retains the bar 72, holds the bar 72 in the extended position when the bar 72 is so positioned, and is fastened to the peripheral component 42 using rivets 76. In the extended position, the bar 72 may support the heel of one's foot above the deck 60 so that one's foot may form an angle relative to the deck 60. Thus, the televator 70 prevents the heel of one's boot from contacting the deck 60 when ascending a hill, and therefore reduces strain commonly experienced in one's calf muscles when ascending the hill.

[0028] FIG. 4 is a perspective view of the frame 32 incorporated in the snowshoe 30 of FIG. 3, according to an embodiment of the invention. The frame 32 includes the peripheral component 42 to provide the snowshoe traction and to maintain the snowshoe's shape when traveling over at least one of the following surfaces (not shown): snow, hard-packed snow and ice. The frame 32 also includes a

cross-member component 46 that extends from a first portion 80 of the peripheral component 42 toward a second portion 82 of the peripheral component 42 to support the peripheral component 42. The peripheral component 42 has a length that is measured in the direction indicated by the arrow 84, a height that is measured in the direction indicated by the arrow 86 and a width that is measured in the direction indicated by the arrow 88. The height is orthogonal to the length, and the width is orthogonal to and intersects the height. To provide traction on hard-packed snow or ice while preventing the snowshoe 30 from substantially deforming when used to traverse such surfaces, the width is at least 2 times shorter than the height at all locations 90 (only three locations are shown for clarity but an infinite number exist) along the height. The cross-member component 46 may or may not have the same ratio of width to height.

[0029] The width may be any distance desired and may vary at each location along the height of a cross-section 92 of the peripheral component 42 as desired, or remain constant. In addition, the width of many similar cross-sections of the peripheral component 42, each perpendicular to the length, may vary relative to each other as desired or not. For example, in one embodiment, the width may be 0.090 inches and substantially the same along the height of the cross-section 90 and throughout the length of the peripheral component 42, and the height may range from 0.59 inches to 1.1 inches. With the peripheral component 42 having substantially the same width throughout the length, the peripheral component 42 may be inexpensively manufactured by cutting or stamping the component 42 from a sheet of material, and then bending the component 42 into the shape desired. In other embodiments, the width may increase as its location progresses along the height and in the direction 86. This may be desirable to further reduce the area of the contact surface 44 to improve traction on an icy surface. Additionally, in other embodiments, the width along the height of one cross-section 92 may be different than the width along another cross-section (not shown) to locally increase the stiffness of the peripheral component 42 to correspond to a local increase in the force experienced.

[0030] Still referring to FIG. 4, the peripheral component 42 may be made from any desired material capable of withstanding the loads exerted on it during use and may be shaped as desired to form the snowshoe 30. For example, in one embodiment the peripheral component 42 may be formed from aluminum 7075-T6 and shaped like a rectangle to define an interior region 94 of the frame 32 and a perimeter of the snowshoe 30. Thus, the peripheral component 42 can protect the edge of the deck 60 (FIG. 3) which may be desired when traversing through shrubs or a crust of ice that a portion of the frame 32 may break through. In other embodiments, the frame 32 may be made from other metals or hard, durable plastic and may be shaped like a teardrop. Additionally, in other embodiments the peripheral component 42 may be made from any desired composite materials, such as carbon fibers and epoxy.

[0031] Still referring to FIG. 4, the frame 32 may include one or more cross-member components 42 to support the peripheral component 42. For example, in one embodiment the frame 32 may include a first cross-member component 96 and a second cross-member component 98 each extending from the first portion 80 to the second portion 82. Each cross-member component 96 and 98 may be located in the

interior region **94** to also support one's foot, and may be fastened to the peripheral component **42** with rivets **100**. The first cross-member component **96** may also be coupled with the crampon **64** (further discuss elsewhere in conjunction with **FIG. 4**) and support the ball of one's foot, and the second cross-member component **98** may support the heel of one's foot. The first cross-member component **96** may include a first end **102** that may be fastened to the first portion **80** of the peripheral component **42**, and a second end **104** that may be fastened to the second portion **82** of the peripheral component **42**. The second cross-member component **98** may include a first end **106** that may be fastened to the first portion **80**, and a second end **108** that may be fastened to the second portion **82**. The ends **102**, **104**, **106** and **108** are configured to absorb energy that may be generated when the peripheral component flexes under the strain of one's weight and/or activity. Each cross-member component **96** and **98** may be made from any desired material, such as plastic or metal like steel.

[0032] Still referring to **FIG. 4**, in one embodiment, the second cross-member component **98** may also include a heel stabilizer **110** to hold the heel of one's boot to prevent the boot from sliding relative to the cross-member component **98**. This may be desirable when traversing across a slope of a hill. The heel stabilizer **110** may include a protrusion **112** to elastically deform or penetrate one's boot heel to prevent the heel from sliding relative to the second cross-member component **98**. If the second cross-member **98** incorporates the heel stabilizer **110**, then the deck **60** in **FIG. 3** may include a slot to allow the protrusions of the heel stabilizer **110** to contact one's boot heel.

[0033] Still referring to **FIG. 4**, to improve traction, the peripheral component **42** may include a traction element **114**, and the cross-member component **46** may include a cross-member traction element **116**. The traction element **94** may extend as desired along the length of the peripheral component **42**. For example, in one embodiment, the traction element **114** extends along the first and second portions **80** and **82**, respectively, and may include one or more protrusions **118** (only 11 referenced in **FIG. 4** for clarity) to focus pressure on an icy or hard-packed surface. Each cross-member component **96** and **98** may include a respective cross-member traction element **116** that may extend most of the distance between the first portion **80** and the second portion **82**. Each cross-member traction element **116** may include one or more protrusions **120** (only 4 referenced in **FIG. 4** for clarity) to focus pressure on an icy or hard-packed surface.

[0034] The pressure is typically generated by one's weight while standing or walking on the snowshoe **30**. By focusing the pressure, each protrusion that contacts an icy surface may locally melt the ice under the protrusion—much like ice skates do—to penetrate the icy surface, or may penetrate the icy surface without locally melting the ice—much like ice picks do. Once the icy surface is penetrated the ice surrounding the tip of the protrusion may prevent the frame from slipping relative to the surface. If the surface is hard-packed snow, each protrusion that contacts the surface may penetrate the surface without locally melting the snow.

[0035] Still referring to **FIG. 4**, the crampon **64** may be mounted to the frame **32** to improve the snowshoe's traction. In one embodiment, the crampon **64** includes one or more

protrusions **122**, may be pivotally mounted to the first cross-member component **96** via a crampon mount **124** that may be fastened to the first cross-member component **96** with any desired fastening technique, such as rivets. The crampon mount **122** may include two flanges **126**, each having a hole (omitted for clarity) that receives a respective one of the pins **128**. The crampon **64** may include a body **130** that includes two flanges **132**, each corresponding with one of the crampon mount flanges **126**, and each having a hole (omitted for clarity) that receives a respective one of the pins **128** to pivotally mount the crampon **64** to the first cross-member component **96**.

[0036] When pivotally mounted to the first cross-member component **96**, the crampon **64** may rotate relative to the first cross-member component **96** between two positions (discussed in greater detail in conjunction with **FIG. 5**) to allow one's foot to rotate relative to the snowshoe **30** as one walks. To prevent the crampon from rotating too far, the crampon **64** includes a crampon stop **134**. In one embodiment, the crampon **64** includes two crampon stops **134**, each extending from a respective one of the flanges **132**. Thus, each crampon stop **134** rotates relative to the first cross-member component **96** as the crampon **64** rotates. To prevent the crampon **64** from rotating past a desired limit (discussed in greater detail in conjunction with **FIG. 5**), one or both crampon stops **134** contacts the crampon mount **124** and/or the first cross-member component **96** (shown in phantom in **FIG. 5**).

[0037] **FIG. 5** is a side view of the snowshoe **30** in **FIG. 3**, according to an embodiment of the invention. The binding **34** may rotate relative to the first cross-member component **96** (**FIG. 4**), as shown in the phantom line and solid line illustrations of an embodiment of the binding **34**, to allow one's foot to rotate relative to the snowshoe **30** as one walks. The solid line illustration of the binding **34** shows the position of the binding **34** when one stands on the snowshoe **30**. In this position, one's weight is supported by both cross-member components **96** and **98** (**FIG. 4**). The phantom illustration of the binding **34** shows the position of the binding **34** at its maximum rotation away from the second cross-member component **98**. In this position, one or both of the crampon stops **134** (only one shown for clarity) contacts the crampon mount **124** (**FIG. 4**) and/or the first cross-member component **96** to prevent the crampon **64** from further rotating away from the second cross-member component **98**.

[0038] The angle  $\alpha$  between the two positions may be any angle desired. In one embodiment, the angle  $\alpha$  may be 67.50 to allow one to better control the snowshoe **30** when one lifts the snowshoe **30** off a surface to move and relocate the snowshoe **30** on the surface for a next step. With  $\alpha$  at 67.50 the crampon stop **134** may also prevent the tip **136** of the snowshoe **30** from hitting one's shin when one lifts the snowshoe **30** off a surface to take another step.

[0039] Still referring to **FIG. 5**, the telelevator **70** may rotate relative to the peripheral component **42** as shown by the phantom line and solid line illustrations of an embodiment of the telelevator **70**. The solid line illustration of the telelevator **70** shows the position of the telelevator **70** when one traverses flat or substantially flat terrain. In this position, the telelevator **70** is located on or just above the deck **60** (not shown in **FIG. 5**; shown in **FIG. 3**) to keep the telelevator **70** from interfering

with the rotation of one's foot relative to the first cross-member component 96 as one traverses a surface. The phantom line illustration of the televator 70 shows the position of the televator 70 when one ascends a slope of a hill. In this position, the televator 70 is extended above the deck 60 to support the one's heel above the deck and prevent the heel from further moving toward the second cross-member component 98. Thus, the televator 70 may reduce the strain experienced in one's calf muscles when ascending a slope of a hill.

[0040] FIG. 6 is a plan view of one of many deck clips 62 incorporated in the snowshoe 30 of FIG. 3, according to an embodiment of the invention. The deck clip 62 couples the deck 60 with the peripheral component 42 in the interior region 94. Thus, the peripheral component 42 may provide the deck 60 additional protections. For example, if the deck 60 overlaps the peripheral component 42 similar to the deck 12 (FIG. 2) overlapping the frame 14 (FIG. 2), then the deck 60 could be damaged by contact with a snowshoe fastened to one's other foot, with shrubs kicked with the snowshoe 30 or other similar types of contact.

[0041] The deck clip 62 may be made from any desired material and may be configured as desired to couple the deck 60 within the interior region 94. In one embodiment, the deck clip 62 may be made from aluminum 7075-T6 and may include an end 136 that the deck 60 may be fastened to, and a head 138 that couples the end 136 with the peripheral component 42. The peripheral component 42 may include a slot 140 that is sized to permit the end 136 to be inserted into the interior region 94 through the slot 140, but to not permit the head 138 to be inserted into the region 94 through the slot 140. Thus, when the end 136 extends through the slot 140 into the interior region 94, the head 138 prevents the deck clip 62 from passing through the slot. The deck 60 may be fastened to the end 136 using any desired fastening technique such as a rivet 142 or other permanent type fasteners, or a removable type fastener.

[0042] Other embodiments of coupling the deck 60 with the peripheral component 42 are contemplated. For example, the deck 60 may be tied to the peripheral component 42. In one embodiment, the deck 60 may include a tab that one may extend through the slot 140 and then over a top portion of the peripheral component 42 to be tied to itself. In another embodiment, the peripheral component 42 may include two slots and the deck 60 may include a tab that one may extend through both slots and then force the slots closed to pinch the tab and thus couple the deck 60 with the peripheral component 42.

[0043] FIG. 7 is a perspective view of a frame 160 according to another embodiment of the invention. The frame 160 is similar to the frame 32 discussed elsewhere herein but does not include a cross-member component (46 in FIGS. 3 and 4). The frame 160 does include a peripheral component 162, which is similar to the peripheral component 42 discussed elsewhere herein, to provide a snowshoe (not shown) traction and to maintain the snowshoe's shape when traveling over at least one of the following surfaces (not shown): snow, hard-packed snow and ice. The peripheral component 162 may be mounted to a deck 164 that is stiff to support the peripheral component 162; or the peripheral component 160 may not. Additionally or alternatively,

the peripheral component 162 may include a stiffener 166 to stiffen the peripheral component 162 or the peripheral component 162 may not.

[0044] If the peripheral component 162 is mounted to a stiff deck 164, the deck 60 may be made of any desired material and may be coupled with the peripheral component 162 using any desired fastening technique. For example, the deck 164 may be made of any desired metal such as aluminum and steel, or any desired hard plastic, and deck clips 168 similar to the deck clips 62 in FIGS. 3 and 6 may couple the deck 164 with the peripheral component 162. In other embodiments, the deck 164 may be made of a flexible material such as urethane coated nylon cloth, and conventional fasteners such as rivets, bolts or adhesives may couple the deck 164 with the peripheral component 162. If the peripheral component 162 includes a stiffener 166, the stiffener may be shaped as desired, and formed as a part of the peripheral component 162 or mounted to the peripheral component 162. For example, in one embodiment, the peripheral component 162 may include a stiffener 166 that is formed as a part of the peripheral component 162. The stiffener 166 may have a cross-section that includes a "U" shape and may extend in a direction along the peripheral component's length. In other embodiments, the stiffener may have a cross-section that includes other shapes such as a "V", and may extend in other directions, such as along the peripheral component's height or a combination of the component's height and length. Alternatively or additionally, the stiffener may be a piece of material that is adjacent and mounted to the peripheral component 162 to stiffen the frame 160. Furthermore, the peripheral component 162 may include more than one stiffener 166.

What is claimed is:

1. A frame for a snowshoe having a shape, the frame comprising:
  - a peripheral component having a length, a height orthogonal to the length, and a width orthogonal to and intersecting the height and at least two times shorter than the height at all locations along the height, wherein the peripheral component provides traction when the frame contacts at least one of the following surfaces: snow, hard-packed snow and ice, and wherein the peripheral component maintains the snowshoe's shape when a person uses the snowshoe to travel across at least one of the following surfaces: snow, hard-packed snow and ice; and
  - a cross-member component that extends from a first portion of the peripheral component toward a second portion of the peripheral component to support the peripheral component.
2. The frame of claim 1 wherein the width is substantially the same at all locations along the height.
3. The frame of claim 1 wherein the width is substantially the same at all locations along the height of each cross-section of the peripheral component that is perpendicular to the length.
4. The frame of claim 1 wherein the peripheral component defines a perimeter of the snowshoe.
5. The frame of claim 1 wherein the width is 0.090 inches.
6. The frame of claim 1 wherein the width is 0.090 inches and the height is at least 0.59 inches.

7. The frame of claim 1 wherein the peripheral component includes a traction element to improve the frame's traction.

8. The frame of claim 1 wherein the peripheral component includes a traction element having a protrusion to focus pressure on at least one of the following surfaces: snow, hard-packed snow and ice, to improve the frame's traction.

9. The frame of claim 1 wherein the cross-member component includes a cross-member traction element to improve the frame's traction.

10. The frame of claim 1 wherein the cross-member component includes a cross-member traction element having a protrusion to focus pressure on at least one of the following surfaces: snow, hard-packed snow and ice, to improve the frame's traction.

11. The frame of claim 1 wherein the cross-member component is operable to receive a crampon to improve the frame's traction.

12. The frame of claim 1 wherein the cross-member component extends from the first portion of the frame through an interior region defined by the peripheral component to an opposing second portion of the frame.

13. The frame of claim 1 wherein the cross-member component includes a first end attached to the first portion of the peripheral component, and a second end attached to the second portion of the peripheral component.

14. The frame of claim 1 wherein the cross-member component includes a heel stabilizer to hold the heel of a boot to prevent the boot from sliding relative to the cross-member component.

15. The frame of claim 1 wherein the cross-member component includes a heel stabilizer having a protrusion operable to deform a portion of a boot's sole to prevent the boot from sliding relative to the cross-member component.

16. The frame of claim 1 wherein the frame includes two cross-member components to support the peripheral component:

a first cross-member component that extends from the first portion of the frame through an interior region defined by the peripheral component to the second portion of the frame, that includes a cross-member traction element to improve the frame's traction, and that is operable to receive a crampon to improve the frame's traction, and

a second cross-member component that also extends from the first portion of the frame through the interior region to the second portion of the frame, and that includes a cross-member traction element to improve the frame's traction, and a heel-stabilizer to hold the heel of a boot to prevent the boot from sliding relative to the second cross-member component.

17. A snowshoe comprising:

a frame including:

a peripheral component having a length, a height orthogonal to the length, and a width orthogonal to and intersecting the height and at least two times shorter than the height at all locations along the height, wherein the peripheral component provides traction when the frame contacts at least one of the following surfaces: snow, hard-packed snow and ice, and wherein the peripheral component maintains the snowshoe's shape when a person uses the snowshoe

to travel across at least one of the following surfaces: snow, hard-packed snow and ice, and

a cross-member component that extends from a first portion of the peripheral component toward a second portion of the peripheral component to support the peripheral component;

a deck coupled with the frame and operable to buoy the snowshoe on a surface of snow; and

a binding operable to fasten a boot to the snowshoe.

18. The snowshoe of claim 17 wherein the snowshoe is operable to traverse across an icy slope of a hill.

19. The snowshoe of claim 17 wherein the deck includes a flexible material.

20. The snowshoe of claim 19 wherein the flexible material includes nylon cloth coated with urethane.

21. The snowshoe of claim 17 further comprising a deck clip operable to couple the deck with the frame.

22. The snowshoe of claim 21 wherein the deck clip extends from the peripheral element into an interior region defined by the peripheral element, and includes an end located in the interior region operable to fasten the deck.

23. The snowshoe of claim 17 further comprising a crampon to improve the snowshoe's traction.

24. The snowshoe of claim 17 further comprising a crampon to improve the snowshoe's traction, wherein the crampon is mounted to the cross-member component and pivotable relative to the cross-member component, and includes a crampon stop operable to stop the rotation of the crampon.

25. The snowshoe of claim 17 wherein the frame includes two cross-member components to support the peripheral element:

a first cross member that extends from the first portion of the frame through an interior region defined by the peripheral element to the second portion of the frame, and includes a cross-member traction element to improve the snowshoe's traction, and that has a crampon mounted to it to improve the snowshoe's traction, and

a second cross member that also extends from the first portion of the frame through the interior region to the second portion of the frame, and that includes a cross-member traction component operable to improve the second cross member's traction, and a heel stabilizer component operable to hold the heel of a boot from sliding relative to the second cross-member component.

26. The snowshoe of claim 17 further comprising a televotor operable to suspend a heel of the foot above the frame.

27. The snowshoe of claim 17 further comprising a televotor mounted to the peripheral element and pivotable relative to the peripheral element to an extended position to suspend a heel of the foot above the frame.

28. The snowshoe of claim 17 wherein the binding includes a strap and a retention element to fasten and release the boot to and from the snowshoe, wherein the retention element is operable to fasten and release the strap without removing a glove from a hand.

29. The snowshoe of claim 28 wherein the retention element is separable from the strap to allow one to fasten the boot to the snowshoe by stepping between the strap and the retention element.

30. A method for moving across a surface:

mounting a snowshoe to a foot;

placing the snowshoe on a surface;

supporting one's weight with a peripheral component and a cross-member component of a frame of the snowshoe, wherein the peripheral component has a length, a height orthogonal to the length, and a width orthogonal to and intersecting the height and at least two times shorter than the height at all locations along the height; and

traversing the surface.

31. The method of claim 30 wherein the surface includes snow.

32. The method of claim 30 wherein the surface includes ice.

33. The method of claim 30 wherein the surface includes hard-packed snow.

34. The method of claim 30 wherein mounting the snowshoe to the foot includes fastening a strap of a binding with a retention element of the binding.

35. The method of claim 34 wherein fastening the strap with the retention element includes inserting the strap through an access passage of the retention element to dispose the strap in a main passage of the retention element.

36. The method of claim 30 wherein supporting one's weight includes improving the traction of the snowshoe with a traction element of the peripheral component.

37. The method of claim 36 wherein improving the traction of the snowshoe includes:

exerting pressure on the surface with the traction element, and

focusing the exerted pressure with a protrusion of the traction element.

38. The method of claim 30 wherein supporting one's weight includes improving the traction of the snowshoe with a cross-member traction element of the cross-member component.

39. The method of claim 38 wherein improving the traction of the snowshoe includes:

exerting pressure on the surface with the cross-member traction element, and

focusing the exerted pressure with a protrusion of the cross-member traction element.

40. The method of claim 30 wherein supporting one's weight includes improving the traction of the snowshoe with a crampon mounted to the frame.

41. The method of claim 30 wherein supporting one weight includes maintaining the snowshoe's shape when traversing at least one of the following surfaces: snow, hard-packed snow and ice.

42. The method of claim 30 wherein traversing the surface includes at least one of the following: traversing across a slope of a hill, ascending a slope of a hill and descending a slope of a hill.

43. The method of claim 41 wherein traversing the surface includes:

pivoting the snowshoe relative to the foot,

lifting the snowshoe above the surface, and

stopping the snowshoe from pivoting beyond a limit with a crampon stop of the crampon.

44. A frame for a snowshoe having a shape, the frame comprising:

a peripheral component having a length, a height orthogonal to the length, and a width orthogonal to and intersecting the height and at least two times shorter than the height at all locations along the height, wherein the peripheral component provides traction when the frame contacts at least one of the following surfaces: snow, hard-packed snow and ice, and wherein the peripheral component maintains the snowshoe's shape when a person uses the snowshoe to travel across at least one of the following surfaces: snow, hard-packed snow and ice.

45. The frame of claim 59 wherein the width is substantially the same at all locations along the height.

46. The frame of claim 59 wherein the width is substantially the same at all locations along the height of each cross-section of the peripheral component that is perpendicular to the length.

47. The frame of claim 59 wherein the peripheral component includes a stiffener to stiffen the peripheral component.

48. The frame of claim 59 wherein the stiffener is formed as a part of the peripheral component.

49. The frame of claim 59 wherein the peripheral component is mountable to a deck that includes solid material to support the peripheral component.

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