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Beck

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[54] **SNOWSHOE BINDING**

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[52] **U.S. Cl.** ..... **36/2.5 AB**
[51] **Int. Cl.** **A43b 00/00**
[58] **Field of Search** ..... 36/2.5 AB, 4.5

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[57] **ABSTRACT**

A binding or harness for securing a boot to the webbing of a snowshoe. The binding includes a wide toe panel and several straps, all comprised of a pliable material such as leather, neoprene-nylon compositions, fabrics, and laminated or layered sheet material. The toe piece or panel has one end secured to the webbing of the snowshoe so as to lie beneath the boot, and it extends forwardly to and upwardly over the toe of the boot. The toe panel provides stability by preventing the boot from sliding forwardly along the snowshoe, and it also prevents snow from accumulating under, over, and around the front of the boot. A toe strap overlies the toe panel and the toe of the boot, and it extends downwardly through slits or openings on each side of the toe panel to attach to the snowshoe webbing on both sides of the boot. An inside strap and an outside strap attached to the showshoe webbing on opposite sides of the toe end of the boot extend rearwardly on each side thereof. The inside strap extends rearwardly to and around the heel of the boot and buckles to the outside strap. An arch strap encircles the boot at an intermediate position between the heel and the toe and holds the inside and outside straps snugly against the sides of the boot. A tie strap connects between the toe panel and the arch strap to hold the top part of the toe panel rearwardly in a proper position.

6 Claims, 5 Drawing Figures

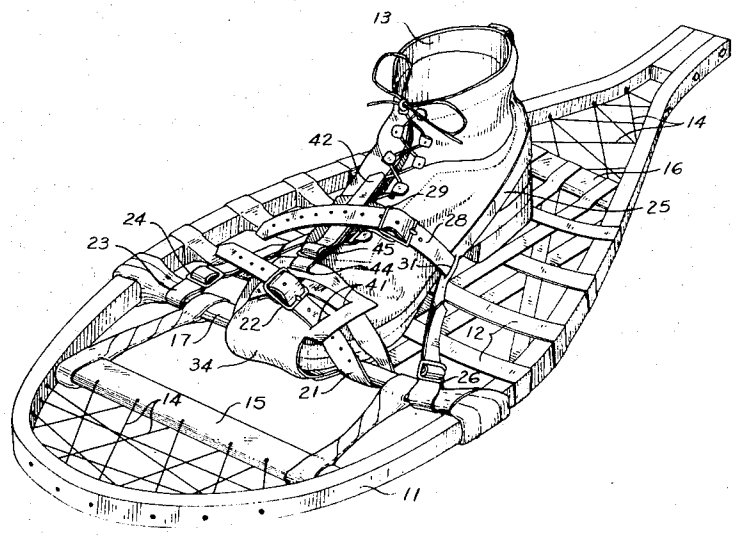


FIG. 1

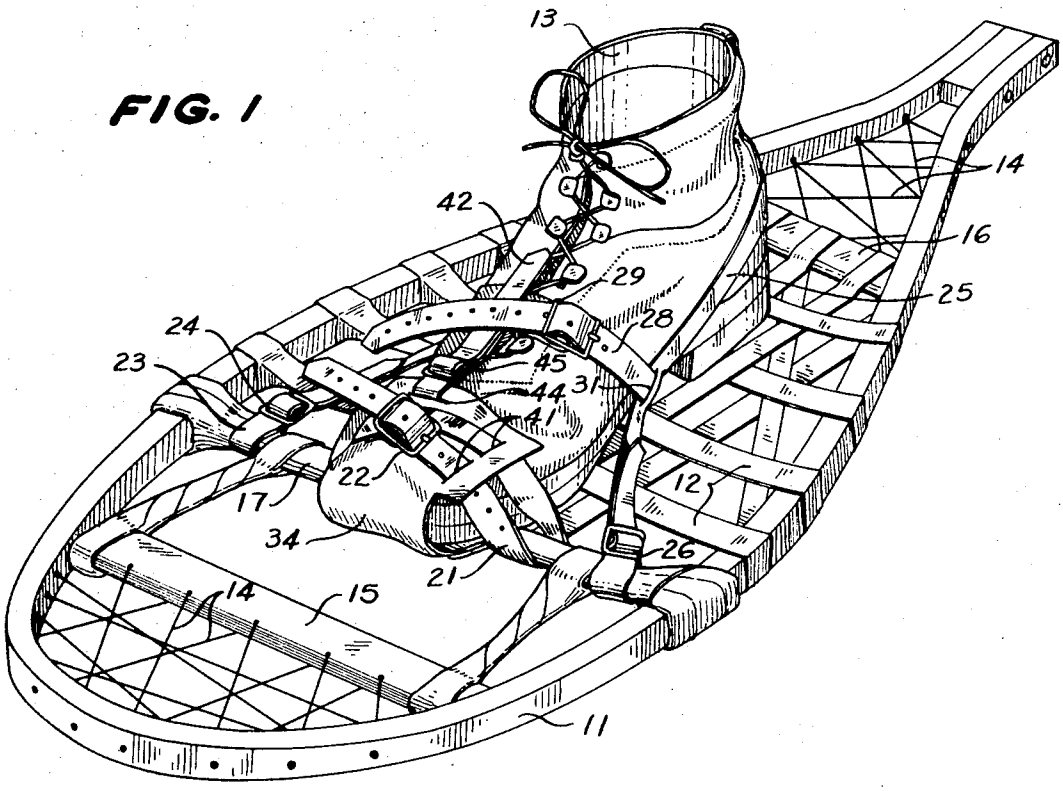
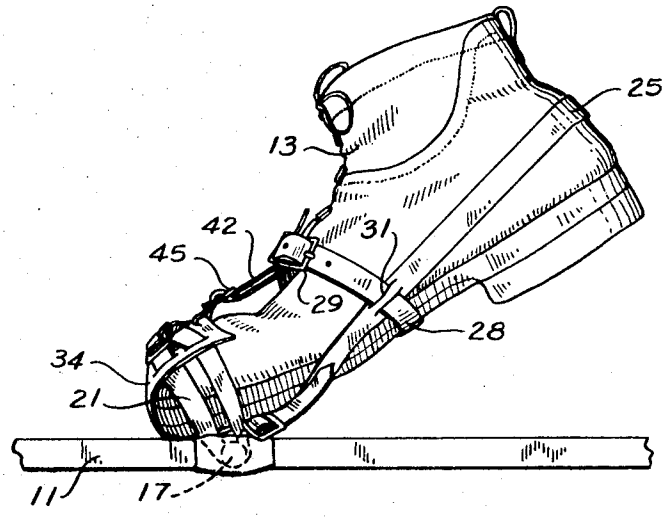


FIG. 2



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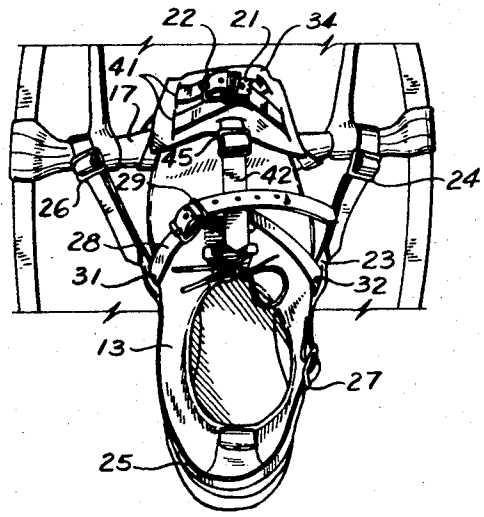


FIG. 3

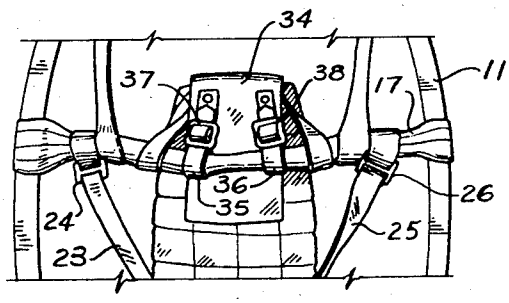
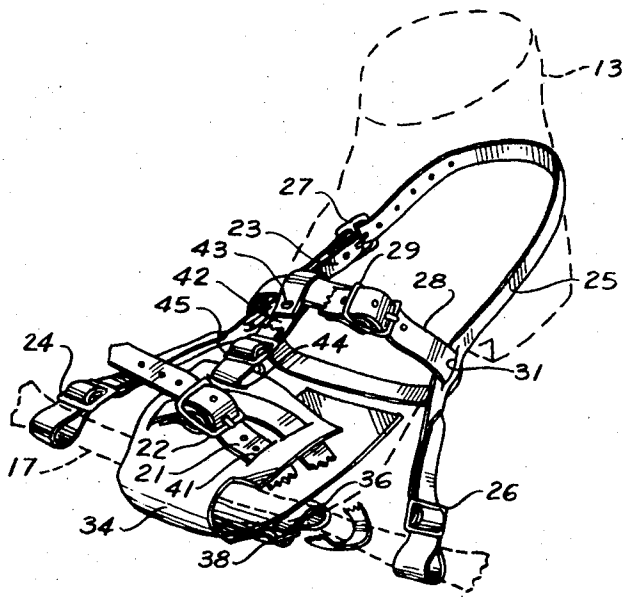


FIG. 4

FIG. 5



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SNOWSHOE BINDING

BACKGROUND OF THE INVENTION

This invention relates to a binding or harness for securing a boot to the webbing of a snowshoe; and it relates more particularly to an improved binding having a wide panel of pliable material extending from a position beneath the sole of the boot upwardly and around the front of the toe thereof to be secured in a position overlying the forepart of the boot.

A snowshoe usually includes a peripheral frame and a webbing comprised of straps and/or cords laced back and forth across the frame to provide a flat, lightweight structure easily supported by soft snow. A crossbar or cross-rib forming a part of the webbing may extend from one side of the peripheral frame to the other to provide a support for the toe end of the hiker's boot. In order to enable a hiker to walk on the snowshoe with facility, the boot is allowed to pivot forwardly about the transversely extending crossbar. However, the boot should be restrained from pivoting or turning about any other axis with respect to the snowshoe. Since the boot is not held rigidly but is allowed to pivot forwardly and rearwardly in a cyclically repetitive manner, that part of the webbing directly under the boot (i.e., the crossbar in particular) is subject to great wear and ordinarily must be of much heavier material than other parts of the webbing not subject to direct contact by the boot.

It is an object of this invention to provide an improved binding for use in securing a boot to a snowshoe, and which binding permits the boot to pivot repetitively forwardly and rearwardly about the crossbar or reinforced part of the webbing of the snowshoe, the toe of the boot being protected from an accumulation of snow thereabout and also secured against translational displacements or slippage with respect to the snowshoe especially in a forward direction.

It is a further object, among others, of this invention to provide an improved showshoe binding of the type described in which a panel of pliable anti-friction material forming a part of the binding is disposed intermediate the toe end portion of the boot and webbing including the crossbar thereof to form a protective pad protecting the crossbar and cooperating with other components of the binding to prevent slippage or translational displacements of the boot relative to the snowshoe, thereby facilitating use of the snowshoe and minimizing wear thereof.

SUMMARY OF THE INVENTION

A boot is secured to a snowshoe by means of a binding that includes a toe strap that crosses twice over the toe of the boot and attaches on both sides thereof to a crossbar constituting a reinforced part of the snowshoe webbing. A toe piece or toe panel is attached to the crossbar or other webbing by means of short straps extending under the toe end of the boot. The toe panel extends from underneath the boot upwardly around the front of the toe of the boot and rearwardly under the toe strap. Slits or openings are provided for the toe strap which passes therethrough. An outside strap and an inside strap buckle together and pass around the heel of the boot and extend to points of attachment with the crossbar to prevent the boot from pivoting or twisting about a vertical axis. An arch strap encircles the boot at a position intermediate the heel and the toe. The arch strap holds the inside and outside straps snugly against the side of the boot. A tie strap, located between the toe panel and the arch strap, holds the end of the toe panel rearwardly in proper position for good stability.

DESCRIPTION OF THE DRAWINGS

The various features and advantages of this invention will become apparent upon a consideration of the following description taken in connection with the accompanying drawings which illustrate an exemplary embodiment of the invention in a binding or harness securing a boot to a snowshoe. The views of the drawing are as follows:

FIG. **1** is a perspective view of a snowshoe with a boot secured thereon by a binding or harness in accordance with this invention;

FIG. **2** is a side elevational view of a fragmentary part of the snowshoe with the boot and the binding secured thereto, and illustrating the manner in which the boot may pivot forwardly upon a crossbar of the snowshoe binding;

FIG. **3** is a partial top plan view looking downwardly from above the snowshoe and boot;

FIG. **4** is a partial bottom plan view looking upwardly from below the toe end of the boot; and

FIG. **5** is a perspective view of the binding in operative association with a boot and crossbar of a snowshoe, each of which is shown in phantom.

DESCRIPTION OF A PREFERRED EMBODIMENT

As shown in FIG. **1**, a typical snowshoe comprises a generally rigid peripheral frame **11** formed of wood and a somewhat flexible webbing **12** crisscrossing the frame from one side thereof to the other in an area to support a shoe or boot **13.** The parts of the webbing **12** which contact the boot **13** and generally underlie the same to support the weight represented thereby are relatively heavy bands and those other parts of the webbing may be lightweight cord **14.** The snowshoe may be reinforced with longitudinally spaced transverse frame elements **15** and **16.** A transverse crossbar or main support **17** constitutes a reinforced part of the webbing, and it also provides a fulcrum or axis of generally horizontal orientation about which the boot **13** may pivot forwardly, as shown in FIG. **2,** and rearwardly alternately in opposite angular directions as one walks along on the shoe **11.**

The various straps and parts of the binding or harness securing the boot **13** to the snowshoe are formed of a pliable material, such as a neoprene-nylon composition. In the past, leather has been commonly used for this purpose, but has several inherent disadvantages. For example, when leather gets wet, it becomes soft and slippery and will stretch and become misshapen, thereby requiring a hiker to stoop over and readjust and tighten his snowshoe bindings after they have stretched unduely. If the hiker is carrying a heavy pack, such stooping is difficult. Also, when leather straps dry out they become hard and stiff; and consequently the buckling and adjusting operations required at this time are difficult and time consuming. Furthermore, leather straps will break unexpectedly to create problems when a hiker may be isolated and away from his base camp and his supplies.

Neoprene-nylon is a synthetic material which is now commercially available, and it has proved to be a greatly superior material for snowshoe bindings. This

material comprises an inner layer or core of a tough nylon fabric permanently bonded to and sandwiched between two layers of heavy neoprene rubber. From such neoprene-nylon material, binding straps and other parts may be formed which are flexible, will not stretch, will not absorb water, and will not collect ice. Although the material is flexible and pliable, it is nevertheless very strong and tough. Holes may be punched or otherwise formed therein for buckles without materially weakening the straps; and, therefore, buckle holes may be larger and more closely spaced than was practical with leather straps. A snowshoe binding of neoprene-nylon material in substantially all cases will be easier to adjust and to buckle onto a boot and a snowshoe.

It will be understood that the usual hiker will require a pair of boots and snowshoes, but for purposes hereof it is sufficient to show and describe a single binding in association with a boot and snowshoe since the second binding is essentially a duplicate thereof. The specific combination illustrated is the boot and snowshoe for a hiker's right foot, and this fact is noteworthy because certain parts and straps may be referred to as "inside" and "outside" components. With respect to the hiker's right foot (as shown), the "inside" parts are on the left side of the boot between the hiker's two feet; and the "outside" parts are on the right side of the boot or away from the hiker's other foot. Obviously, these parts are reversed when examining the boot and snowshoe for the hiker's left foot.

With reference to the drawing, a toe strap **21**, crosses over the top of the toe end of the boot **13** and attaches to the webbing **12** of the snowshoe on each side of the boot in encircling relation with the crossbar **17**. The toe strap **21** actually crosses the toe of the boot **13** twice and extends down to and around the crossbar **17** on both sides of the boot and closes upon itself with its ends fastened together by a buckle **22**. An outside strap **23** has one end secured by a slide fastener **24** to the crossbar **17** of the snowshoe webbing, and it extends rearwardly along the outside of the boot **13** toward the heel theref. Analogously, an inside strap **25** has one end secured to the crossbar **17** of the webbing by a slide fastener **26**, and it extends rearwardly along the inside of the boot to and around the heel to the outside thereof where the inside strap **25** and outside strap **23** are fastened together by a buckle **27** (see FIGS. **3** and **5**).

An arch strap **28** encircles the boot **13** about the arch thereof which is an intermediate position between the heel and the toe of the boot, and the two ends of the arch strap are closed and fastened together by a buckle **29**. The arch strap **28** passes through a pair of slits or openings **31** in the inside strap **25** and through a similar pair of slits **32** in the outside strap **23** such that the arch strap **28** will be held in the arch or intermediate position with respect to the boot **13** and cannot slip longitudinally therealong. The arch strap **28** functions to hold both the outside and inside strips **23** and **25** snugly against the sides of the boot **13**. As shown in FIGS. **1** and **3**, the outside and inside straps **23** and **25** are both fastened to the webbing or crossbar **17** thereof at transverse points spaced rather widely from each other and from the boot **13**. The outside and inside straps **23** and **25** thereby restrain the boot from twisting or pivoting with respect to the snowshoes about a vertical axis, while at the same time allowing the boot to pivot forwardly about the horizontal axis defined by the crossbar **17**.

A toe piece or toe panel **34** underlies the toe of the boot **13** in overlying relation with the webbing **12** of the snowshoe, and extends fowardly to and upwardly around the toe of the boot to a position overlying the forepart thereof. A pair of short anchor straps **35** and **36** are secured to the crossbar **17** of the snowshoe webbing by slide fasteners **37** and **38**, and are attached to the toe panel **34** by means such as rivets (see FIG. **4**). The straps **35** and **36** provide a means for fastening the toe panel **34** to the webbing of the snowshoe beneath the boot **13** and fixedly locating the toe panel with respect thereto.

The toe panel **34** is a rather wide strap which wraps over the toe of the boot **13**, and it is provided with an extra width on the top end overlying the boot to allow for slits or openings **41** along each side thereof. As shown in FIGS. **1**, **2**, and **5**, there are two slits or openings **41** on each side of the upper end of the toe panel **34** through which the toe strap **21** pass. The toe panel **34** is thereby coupled to the toe strap **21** so that (a) the upper end of the toe panel **34** is held down over the toe of the boot **13**, and (b) the toe strap **21** is restrained from slipping off of the toe of the boot by the toe panel **34**. The toe strap **21** is threaded or passed from an initial or first position over the toe panel **34** and the toe of the boot **13** through the inner rear of the openings **41**, downwardly to and around the crossbar **17**. Then the toe strap **21** passes upwardly through the inner front of the openings **41** in the toe panel and crosses over toe panel **34** and over toe of the boot, and thereafter passes downwardly through the outer rear slit or opening in the toe panel to and around the crossbar **17** and upwardly therefrom on the other side of the boot. Finally, the toe strap **21** passes upwardly through the outer front slit in the toe panel **34** to the first or initial position over the toe of the boot where the two ends are fastened together by the buckle **22**.

A tie strap **42** connects between the upper end of the toe panel **34** and the arch strap **28** to hold the toe panel in place over the toe of the boot **13**. One end of the tie strap **42** is formed in a loop and is held by means such as a rivet **43** (see FIG. **5**) in encircling relation with the arch strap **28**. The other end of the tie strap **42** passes through a slit or opening **44** at the upper end of the toe panel and is held by a slide fastener **45**. Since the toe panel **34** is held beneath the boot by the anchor straps **35** and **36** and is held above the boot by the tie strap **42**, the toe panel **34** will restrain the boot **13** from moving forwardly with respect to the snowshoe. This feature becomes very important when the hiker is walking downhill at which time the boot will tend to slide forwardly on the snowshoe with each step.

The short anchor straps **35** and **36** with their slide fasteners **37** and **38** positioned beneath the boot and the snowshoe create no problems when hiking in snow; and indeed the downwardly facing straps and fasteners actually provide additional traction for gripping the underlying surface which is useful especially in ice-snow. As indicated previously, the neoprene-nylon harness or snowshoe binding will not absorb moisture and does not tend to collect ice. In addition, the neoprene rubber surface of the binding is a good friction material such that any tendency for slippage between parts is minimized.

The toe piece or toe panel **34** stabilizes the snowshoe to provide a rigidly and excellent control for a hiker using this binding or harness. The side straps effectively

prevent pivotal movement about a vertical axis, but permit forward pivotal movement or angular articulation around the horizontal axis of the crossbar **17** of the snowshoe webbing. The toe panel **34** additionally keeps snow from accumulating over, under, or around the toe section of the boot; and it also protects the webbing of the snowshoe from undue wear by providing a pad extending rearwardly under the sole of the boot and over that part from contact with the boot. Therefore, it will be appreciated that the addition of the toe panel to this snowshoe binding is very beneficial in increasing the stability and control of the snowshoe by the hiker; and in protecting both the boot and the webbing of the snowshoe from adverse effects of snow and ice accumulation and of excessive wear between the parts.

While in the foregoing specification an embodiment of the invention has been set forth in considerable detail for purposes of making a complete disclosure thereof, it will be apparent to those skilled in the art that numerous changes may be made in such details without departing from the spirit and principles of the invention.

I claim:

1. A snowshoe binding for securing a toe- and heel-equipped boot to webbing of a snowshoe, comprising: a toe strap of pliable material adapted to extend transversely over the toe of said boot and downwardly therefrom to be fastened to the webbing on both sides of such boot; a toe panel of pliable material adapted to overlie the toe of such boot and be attached to said toe strap thereat and to extend forwardly and downwardly over the toe and thence rearwardly beneath such boot intermediate the webbing underlying the same; strap means for fastening said toe panel to the webbing of such snowshoe at a position beneath the boot; an inside strap and an outside strap equipped with means for fastening first ends thereof to parts of the webbing of such snowshoe on opposite sides of the toe of such boot, said inside and outside straps being adapted to extend rearwardly from the first ends thereof with one strap extending to and around the heel of the boot and thence forwardly to a point of connection with the other; an arch strap for encircling such boot at a position intermediate the toe and heel thereof; and means connecting said arch strap and said inside and outside straps for holding the same snugly against the sides of such boot including openings in said inside and outside straps, said arch strap passing through said openings whereby said arch strap will be held in fixed positions along said inside and outside straps when confining the same against such boot.

2. A snowshoe binding for securing a toe- and heel-equipped boot to webbing of a snowshoe, comprising; a toe strap of pliable material adapted to extend transversely over the toe of said boot and downwardly therefrom to be fastened to the webbing on both sides of such boot; a toe panel of pliable material adapted to overlie the toe of such boot and be attached to said toe strap thereat and to extend forwardly and downwardly over the toe and thence rearwardly beneath such boot; strap means for fastening said toe panel to the webbing of such snowshoe at a position beneath the boot; an inside strap and an outside strap equipped with means for fastening first ends thereof to parts of the webbing of such snowshoe on opposite sides of the toe of such boot, said inside and outside straps being adapted to extend rearwardly from the first ends thereof with one strap extending to and around the heel of the boot and thence forwardly to a point of connection with the other; an arch strap for encircling such boot at a position intermediate the toe and heel thereof; means connecting said arch strap and said inside and outside straps for holding the same snugly against the sides of such boot; and a tie strap connecting said toe panel and arch strap for securing said toe panel in position against forward longitudinal displacements with respect to said boot.

3. A snowshoe binding in accordance with claim **2** wherein said toe panel and all of said straps are flexible and comprised of a neoprene-nylon material having an inner layer of nylon fabric permanently bonded and sandwiched between two layers of neoprene rubber.

4. A snowshoe binding in accordance with claim **2** wherein said means connecting said arch strap and both said inside and outside straps comprises openings in both said inside and outside straps, said arch strap passing through said openings whereby said arch strap will be held in fixed positions along said inside and outside straps when confining the same against such boot.

5. A snowshoe binding for securing a toe- and heel-equipped boot to webbing of a snowshoe, comprising; a toe strap of pliable material adapted to extend transversely over the toe of said boot and downwardly therefrom to be fastened to the webbing on both sides of such boot; a toe panel of pliable material adapted to overlie the toe of such boot and be attached to said toe strap thereat and to extend fowardly and downwardly over the toe and thence rearwardly beneath such boot intermediate the webbing underlying the same and be connected with the webbing thereat; an inside strap and an outside strap equipped with means for fastening first ends thereof to parts of the webbing of such snowshoe on opposite sides of the toe of such boot and at transversely spaced locations therewith, said inside and outside straps being adapted to extend rearwardly from the first ends thereof with one strap extending to and around the heel of the boot and thence forwardly to a point of connection with the other; an arch strap for encircling such boot at a position intermediate the toe and heel thereof; and means for connecting said arch strap and said inside and outside straps for holding the latter snugly against the sides of such boot and for holding the former in fixed positions along said inside and outside straps when confining the same against such boot.

6. A snowshoe binding in accordance with claim **5** and further comprising a tie strap connecting said toe panel and arch strap for securing said toe panel in position against forward longitudinal displacements with respect to said boot.

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