

[54] **SIZE ADJUSTABLE SKI BOOT**

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[52] U.S. Cl. **36/2.5 AL**

[51] Int. Cl.² **A43B 00/00**

[58] Field of Search **36/2.5 R, 2.5 AL, 81**

[56] **References Cited**

UNITED STATES PATENTS

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Primary Examiner—Patrick D. Lawson

Attorney, Agent, or Firm—Graybeal, Barnard, Uhler & Hughes

[57] **ABSTRACT**

A ski boot adjustable to fit a range of foot sizes of the type having a molded semirigid plastic outer shell with a fixed outer size instep and toe portion and external buckles for adjusting the fit of the boot only in the ankle and shin area. At least the top and sides of the instep and toe portion of the boot being padded with a substantially nonresilient "slow memory" foam capable of being compressed to a substantial degree without resiliently pushing back and a vertically movable insole mounted within the shell. Means for vertically moving the insole actuatable from without the boot through openings in the plastic shell in or adjacent the sole portion of the boot are also disclosed.

13 Claims, 16 Drawing Figures

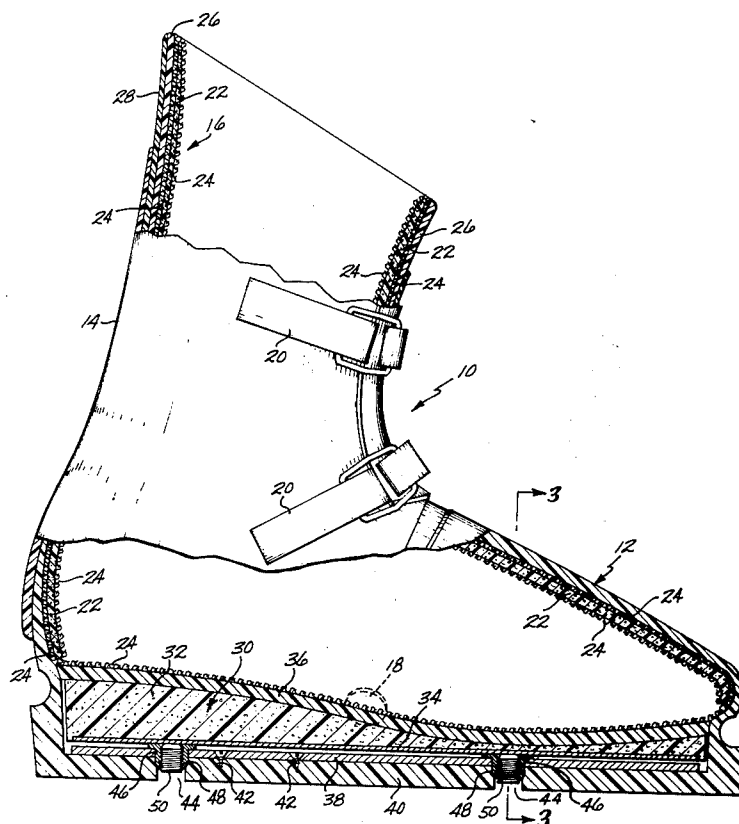


Fig. 1

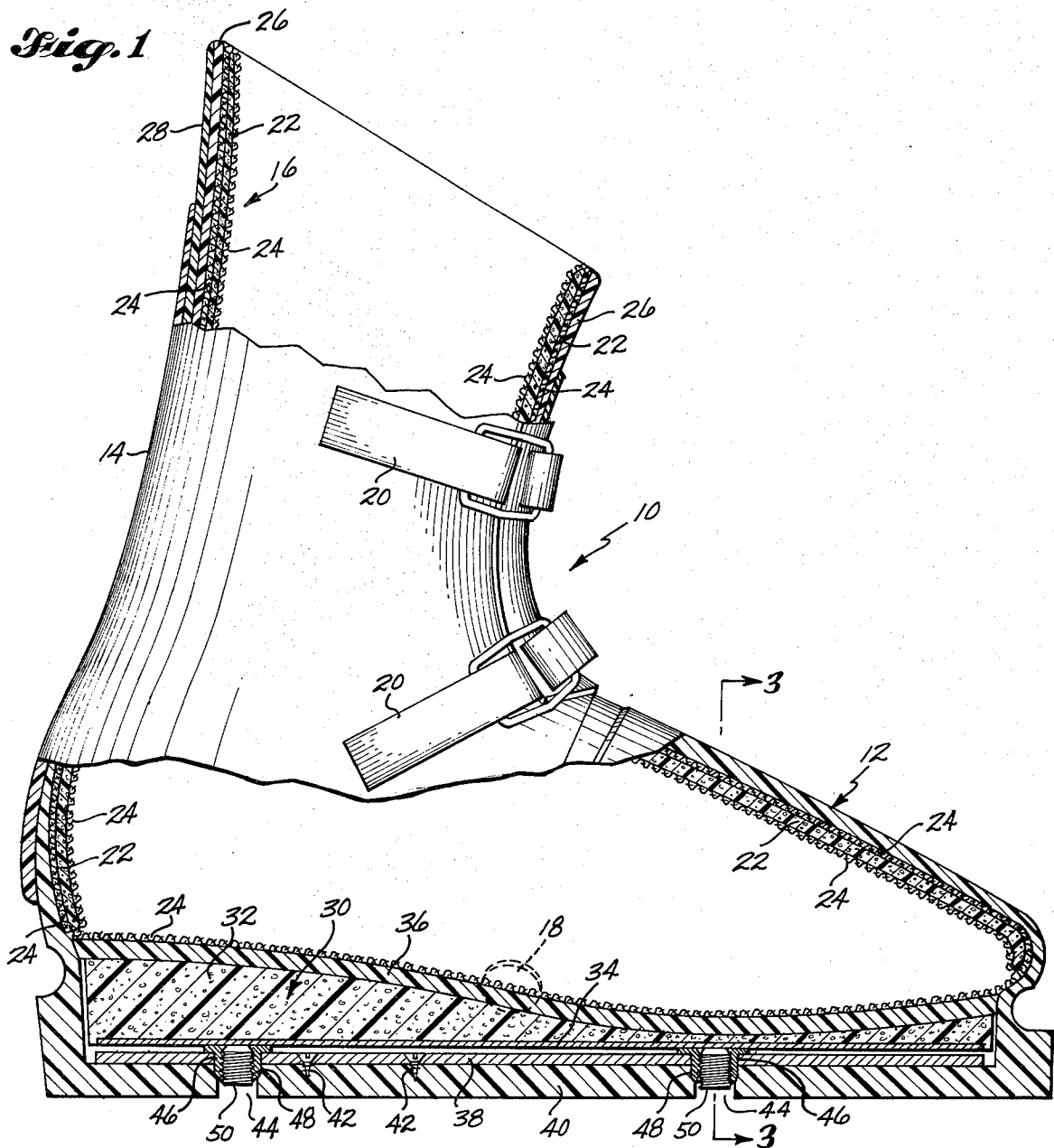


Fig. 2

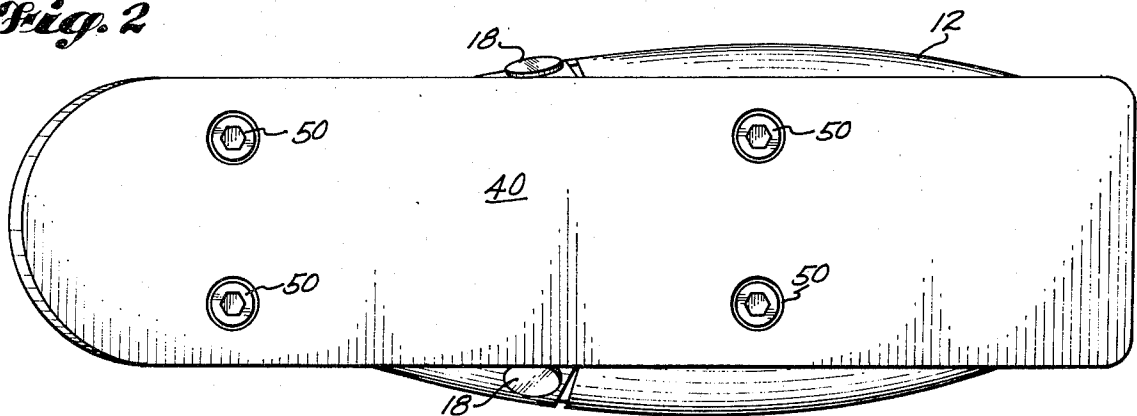


Fig. 3

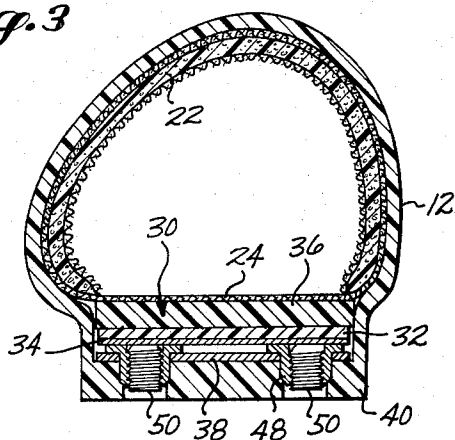


Fig. 4

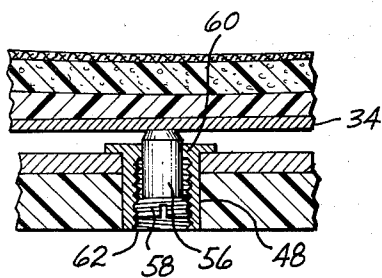
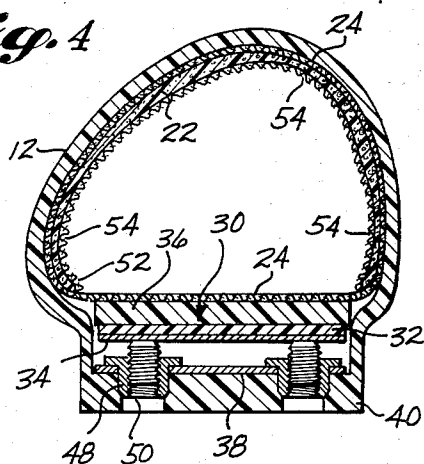


Fig. 5

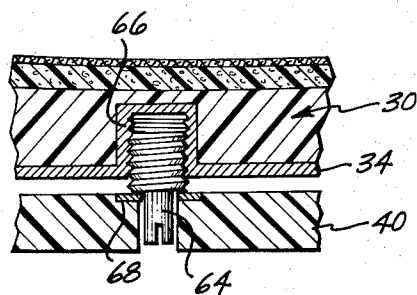


Fig. 6

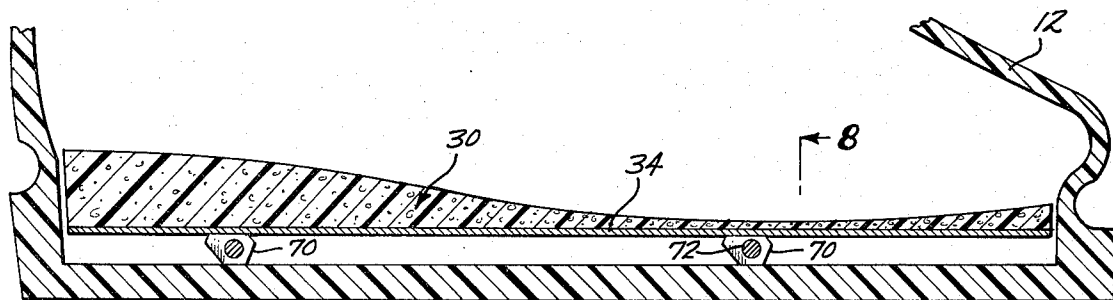


Fig. 7

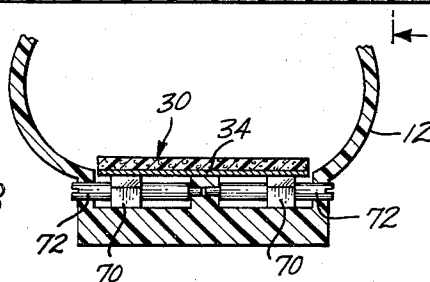


Fig. 8

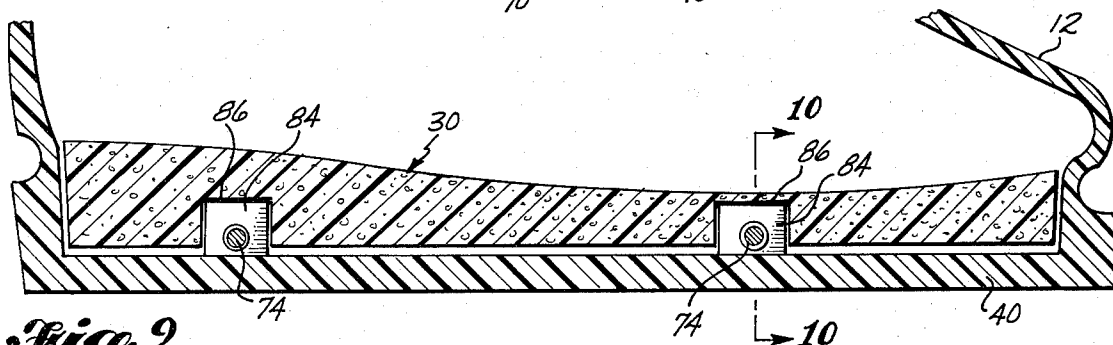


Fig. 9

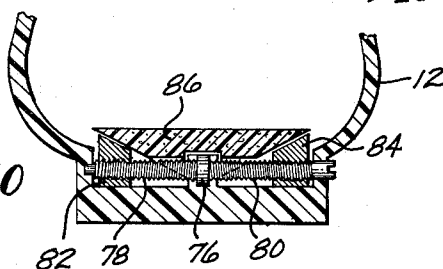


Fig. 10

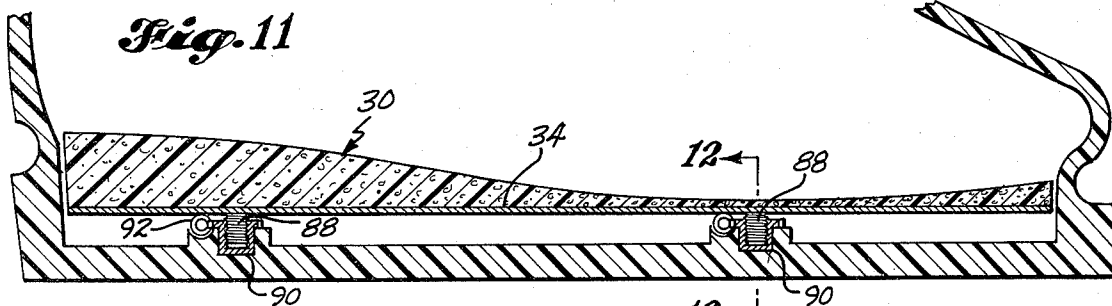


Fig. 11

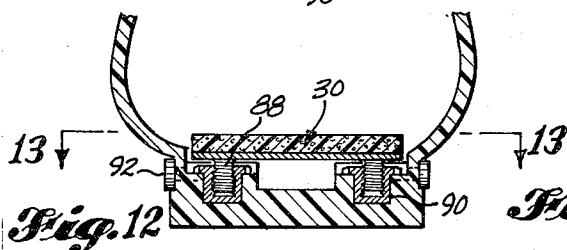


Fig. 12

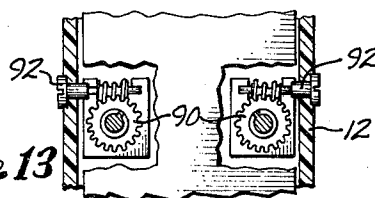
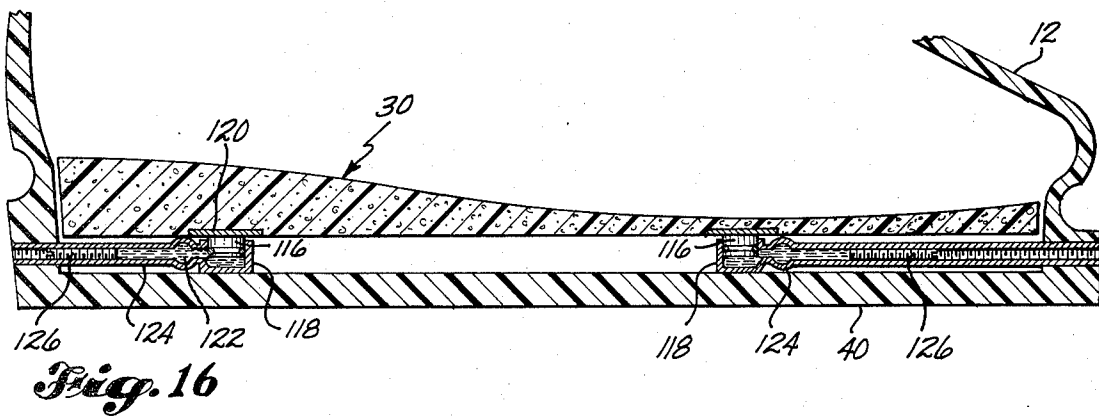
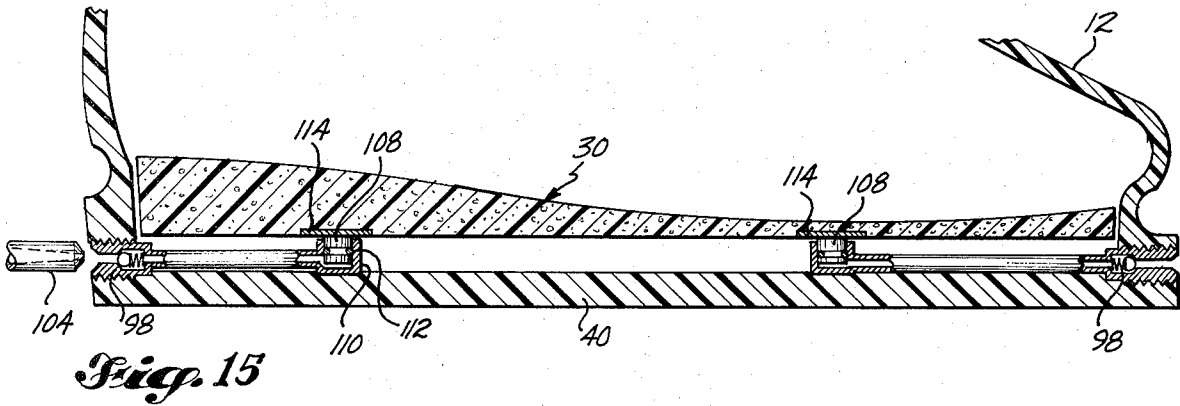
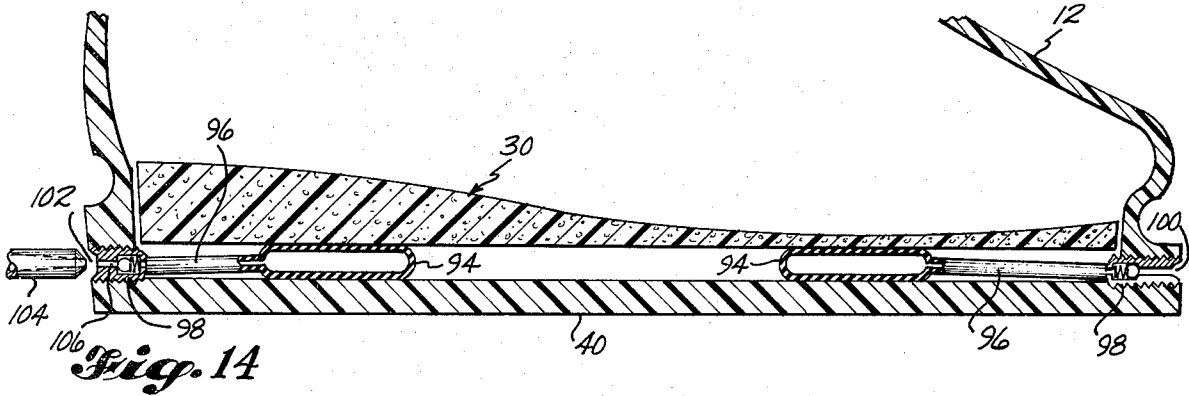


Fig. 13



SIZE ADJUSTABLE SKI BOOT

BACKGROUND OF THE INVENTION

1. Field of the Invention

This invention relates in general to ski boots, and in particular to means for varying the foot size of rigid or semi-rigid plastic shell ski boots. More specifically the invention relates to a ski boot combining substantially nonresilient "slow memory" foam padding in at least the instep and toe area with a vertically adjustable insole to provide a ski boot that may be comfortably worn by persons having different foot sizes.

2. Description of the Prior Art

In recent years, the ski boot industry has converted almost totally from the manufacture and sale of leather boots to boots having rigid or semirigid plastic outer shells and inner padding of sponge rubber, expanded or shreaded polystyrene foam or other material designed to hold the wearer's foot comfortably within the plastic shell with relatively little movement. In addition to having performance and durability advantages as compared to leather boots, plastic shell boots have provided a significant economic advantage both to ski shops and ski manufacturers by allowing a reduction in the amount of relatively expensive plastic shell inventory needed to be maintained by a ski shop for the reason that the addition of greater or lesser amounts of padding material to a plastic shell may allow the boot to fit more than one foot size. For example a single plastic shell may be used to fit size 9 and 10 feet or even size 9, 10 and 11 feet depending on the amount of lining material placed within the shell. The use of single size shells to form boots of differing foot size has generally been accomplished through a so-called custom foaming procedure wherein the purchaser stands in the boot shell and a liquid or plastic foam material or the like is injected into the boot to surround the wearer's foot and allowed to harden. Custom foaming has proved, however, to have substantial disadvantages relating to handling the sometimes odoriferous materials, obtaining proper boot fit due to inexperience of the ski shop personnel thus resulting in the injection of improper amounts of foam or failure of the foam to be forced to flow completely around the wearer's foot, and failure of the foam material itself such as by too rapid breakdown of the foam during use of the boot. These and other problems have caused many to give up the custom foam technique even while recognizing the consequent need for greater inventories with pre-padded boots.

Plastic ski boot shells have also been factory lined with "flow" materials which tend to adapt to size and shape idiosyncracies of an individual's foot by flowing away from pressure points between the foot and the boot shell. Examples of flow materials which have been used to pad plastic ski boot shells include phenolic resin beads embedded in silicone based lubricating grease, small pieces of cork suspended in petroleum and other fluids including a variety of liquids and air. While these materials have a capability of conforming to a wearer's foot to a degree, this capability generally does not extend to allowing persons of differing foot size to wear the same boot comfortably.

The conventional means for adjusting the fit of a plastic ski boot is by tightening or loosening buckles spaced along a seam extending from the vicinity of the toe of the boot to the top of the boot such as shown for example in U.S. Pat. Nos. 3,570,148 and 3,722,112.

The ability to change the size of the boot in this manner by, in effect, drawing the instep or tongue portion of the boot downwardly toward the sole of the boot is limited both by the capabilities of the buckles themselves and by the tendency of overly tightened buckles to change the inner shape of the boot to cause uncomfortable pressure point contact with the top of the wearer's foot. Some plastic shell ski boots have been designed with a toe and instep portion of fixed size with buckles or other fastening members located only in the ankle or shin portion of the boot. Boots of this design have generally been considered to be limited in size variation to relatively minor adjustments associated with specific foot shapes within a conventional set size.

Tilting of a ski boot insole to cant the boot is known in ski boots manufactured and sold by the Henke Company wherein the insole is mounted on set screws recessed in the sole bed. The Henke boot is a custom foam or flow fit boot. U.S. Pat. No. 3,325,920 discloses a ski boot having an insole movable a slight degree to obtain a tightening effect should the boot become slightly loose while skiing. The pads within the boot comprise suede leather packets filled with a mixture of small discreet hollow spheres surrounded by lubricating grease. The instep packet while tending to conform to the wearer's foot has a fixed total volume during use and thus it will be understood that the degree of upward movement of the foot is limited by the tendency of the noncompressible grease mixture to press uncomfortably back upon the wearer's foot. Ski boots employing slow memory foam of the type described hereafter as padding material and having removable, interchangeable insoles of differing size to change the foot size of the boot are also known.

BRIEF SUMMARY OF THE INVENTION

The present invention provides a plastic shell ski boot adjustable to fit a range of foot sizes and in particular, a ski boot having a molded plastic shell of fixed outer size in the instep and toe area and means for adjusting the size of the inner foot cavity of the boot. An insole movable vertically with respect to the bottom of the ski boot is provided in combination with an instep lining formed from one or more layers of a substantially nonresilient expanded vinyl or urethane foam preferably of the closed cell type, and commonly called slow memory foam because of the slowness of the foam's tendency to return to shape after compression. The character of the foam lining allows it to be compressed in the instant invention without its pushing resiliently back during upward movement of the insole at points where the edges of the insole contact the bottom portions of the foam lining or where the wearer's foot presses against the top surface of the instep. The characteristic of the disclosed foam whereby it may be compressed without resiliently springing back against the wearer's foot allows foot comfort to be maintained over a range of foot sizes. A number of mechanisms for raising and lowering the insole of the boot are disclosed.

It is an object of the present invention, therefore, to provide a ski boot capable of being worn with comfort by persons having different foot sizes.

Another object is to provide a ski boot having a molded plastic outer shell, a vertically movable insole and instep padding formed from a slow memory expanded foam.

One more object is to provide a plastic shell ski boot capable of being comfortably worn by persons of different foot size wherein the boot padding is formed in part from pre-expanded slow memory foam sheet material.

Another object is to provide a plastic shell ski boot capable of being comfortably worn by persons of different foot size wherein the boot padding is formed of a factory injected slow memory liquid foam.

Still another object is to provide means for varying the foot size of a ski boot of the type wherein the instep and toe portion of the plastic outer shell is of fixed size and does not include external buckle means in the instep or toe area.

Other and additional advantages will be apparent from the following description taken in conjunction with the accompanying drawings.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a partial sectional side elevation view of a typical ski boot embodying the present invention.

FIG. 2 is a bottom plan view of the ski boot of FIG. 1.

FIG. 3 is a sectional view taken along line 3—3 in FIG. 1 showing the vertically movable insole in its lowest position.

FIG. 4 is a view similar to FIG. 3 but showing the vertically movable insole in a raised position and indicating a typical compression pattern of the slow memory foam lining of the boot.

FIG. 5 is a partial sectional view of another form of threaded sleeve and insole adjusting screw.

FIG. 6 is a view similar to FIG. 5 showing still another form of threaded sleeve and adjusting screw.

FIG. 7 is a partial sectional side elevation view of another form of insole adjusting mechanism including a pair of shaft mounted cams.

FIG. 8 is a view taken along line 8—8 in FIG. 7.

FIG. 9 is a partial sectional side elevation view of an insole elevating mechanism including wedge-shaped members movable laterally on a threaded shaft to raise or lower an insole support block.

FIG. 10 is a view taken along line 10—10 in FIG. 9.

FIG. 11 is a partial sectional side elevation view of another form of insole elevating means comprising a threaded pin and gear jack mechanism.

FIG. 12 is a view taken along line 12—12 in FIG. 11.

FIG. 13 is a view taken along line 13—13 in FIG. 12.

FIG. 14 is a partial sectional side elevation view of an insole lifting mechanism including a pair of valved air bladders.

FIG. 15 is a partial sectional side elevation view of an insole raising and lowering mechanism including an air actuated piston.

FIG. 16 is a partial sectional side elevation view of still another insole raising and lowering mechanism including a fluid actuated piston.

DETAILED DESCRIPTION OF THE INVENTION

Referring initially to FIG. 1, a ski boot 10 constructed according to the instant invention is disclosed including a molded plastic shell portion 12, plastic ankle cuff 14 and internal padding 16. Outer shell 12 may be formed from a variety of suitable materials one of which is a molded polyurethane having a durometer hardness of between 35d and 100d. Cuff 14 is affixed to shell 12 by means of rivets 18 on the lateral sides of the boot adjacent the sole portion of the shell. Conventional fastening means such as buckles 20 are associ-

ated with the cuff member to fasten the cuff securely about the ankle portion of the shell to hold the boot securely to the wearer's foot. In the illustrated embodiment no external buckles are provided in the toe and instep area of the boot.

Internal boot padding 16 includes in the toe and instep portion of the boot a layer 22 of closed cell expanded foam of the type commonly called slow memory foam. More particularly this may be a foam having compression set values in the following ranges, i.e. compression set as a percent of original thickness (ASTM D 1564-71T) may vary between $C_t = 15\%$ and $C_t = 45\%$, with a preferred value being approximately $C_t = 30\%$. Compression set as a percent of original deflection (ASTM D 1564-71T) may vary between $C_d = 45\%$ and $C_d = 75\%$, with a preferred value being approximately $C_d = 60\%$. Further the foam may have a ball rebound resilience value (ASTM D 1564-71T Suffix R) of between 20 and 45% with a preferred value of approximately 33%.

One satisfactory slow memory foam lining material of the closed cell vinyl type was tested to have the following properties:

TABLE A

PROPERTY	TEST METHOD	RESULT
Hardness	ASTM D 2240-65T	7/4 Shore A
Density	ASTM D 1667-64	8 lbs./ft. ³
Elongation	ASTM D 1564-64T	250 %
Tensile Strength	ASTM D 1564-64T	45 p.s.i.
Compression Set		
Max. Deflection	ASTM D 1667-64	15 %
Thermal Conductivity		
BTU in./hr. sq. ft. ²		0.3
Water Absorption	ASTM D 1667-64	0.06 lbs./ft. ²
Buoyancy	TSO-C72a	Floats
Soil Exposure		
Tensile Strength & Elongation Change	Buried Foam For One Year Period	No Change
Shrinkage at 140°F	ASTM D 1667-64	None
Flame Resistance	ASTM D 1692-59T	"Non-burning"
Service Temperature		-20° to 200°F

Another satisfactory slow memory closed cell vinyl foam was tested to have the following properties:

TABLE B

PROPERTY	TEST METHOD	RESULT
Hardness	ASTM D 2240-65T	6/2 Shore A
Density	ASTM D 1667-64	6 lbs./ft. ³
Elongation	ASTM D 1564-64T	120 %
Tensile Strength	ASTM D 1564-64T	56 p.s.i.
Compression Deflection	ASTM D 1667-64	1.5 p.s.i.
25% Deflection (PSI after 60 sec.)		
Tear Resistance	ASTM D 1564-64T	6.5 p.l.i.
Water Absorption	ASTM D 1667-64	0.1 lbs./ft. ²
Buoyancy	TSO-C72a	Floats
Soil Exposure		
Tensile Strength & Elongation Change	Buried Foam For One Year Period	No Change
Shrinkage at 140°F	ASTM D 1667-64	None
Flame Resistance	ASTM D 1692-59T	"Non-burning"

In one boot embodiment the lining material is formed from $\frac{1}{4}$ inch thick pre-expanded pads cut to size. Alternatively, a factory foaming process may be used wherein a liquid slow memory foam material is injected into a hollow bladder positioned between the plastic boot shell and a foot shaped mandrel. The bladder and mandrel are positioned within the shell prior to injection of the foam thus the outer surface of the foam conforms to the inner shape of the ski boot shell while the

inner surface of the foam conforms to the foot shaped mandrel. The factory foaming process preferably employs a closed cell foam, but open cell urethane foam may also be used.

The sheet foam may be encased within a sock indicated in part at 24 formed of a urethane coated stretch fabric or other suitable material or the foam may be fastened directly to the inner surface of the plastic shell. The sock may be removable from the boot to facilitate placing the sock and boot on a wearer's foot. In the shin portion of the boot, additional spongy outer foam 26 of a very resilient type is layered with the slow memory foam to hold the wearer tightly in the boot and prevent sore spots from developing on the wearer's leg at points of movement of the leg vis-a-vis the boot. A calf support 28, which in one embodiment is formed of nylon and has a thickness of approximately 0.02 inch, is also shown employed to ease the transition of the wearer's leg into the boot and reduce the possibility of a sore spot developing adjacent the top portion of the boot cuff.

A vertically movable inner sole 30 comprising a rigid polyurethane foam core portion 32 and having a metal plate 34 embedded therein or affixed thereto is shown positioned within the boot shell. The inner sole includes a soft foot pad 36 affixed to the top portion of the insole for wearer comfort. In one form the pad may be formed from polypropylene. The insole is movable within the boot shell and may be removed entirely therefrom in some embodiments of boots having removable sock type padding. Plate 34 is preferably approximately 1/16 inch thick and formed of a metal such as aluminum which is both lightweight and strong.

A second metal plate 38 is shown positioned on the inner surface of the sole 40 of the plastic boot shell and is affixed thereto by means of glue or wood screws 42. Openings 44 are provided to extend through the sole of the boot shell and holes 46 are also provided within metal plate 38 and aligned with holes 44. Internally threaded sleeves 48 are affixed to metal plate 38 in a conventional manner and are adapted to receive cooperatingly threaded set screws 50 therein. Set screws 50 may be of Allen type and it will be understood that rotation of the screws within sleeve 48 will cause insole 30 to be moved vertically within the boot shell 12.

Referring now to FIG. 3, a cross-section of boot 10 at the instep with set screws 50 in their retracted position is shown. Assuming a plastic boot shell suitable for use by persons having either a size 11 or 12 foot, the slow memory foam lining 22 in FIG. 3 is shown to be relatively uncompressed and movable insole 30 is shown in its lowermost position as might be the case with the boot being worn by a person having a relatively normally shaped size 12 foot. FIG. 4 illustrates the internal configuration of the same boot modified to give a comfortable fit to a person having a size 11 foot. Set screws 50 have been rotated upwardly with respect to fixed internally threaded sleeves 48 to raise insole 30 vertically with respect to the sole 40 of the ski boot shell. The slow memory foam is shown to have been compressed in response both to the elevation of the insole and to the shape of the foot positioned within the boot. The lower edges of the slow memory foam padding at points 52 has been compressed to a thin sheet by the lower edges of the wearer's foot. The ability of the disclosed foam to compress in this manner without uncomfortably pushing back resiliently against the wearer's foot makes possible the obtaining of a comfortable fit even

after the major movement of the insole to allow the boot to fit a size 11 foot. Conventionally used resilient foam materials would either not be compressible to the degree necessary to provide a comfortable fit or would exert such resilient compression force on the foot as to cause painful "hot spots." Similarly incompressible flow materials would be unsatisfactory due to the flow material having no suitable place to migrate within the boot shell in response to the pressure exerted thereon by the wearer's foot being raised thereagainst. In the same manner, the top and side portions of the instep of the wearer's foot have substantially compressed the slow memory foam at points 54 and it will be understood that a comfortable fit is achieved because of the slow memory foam's ability to conform to the shape of the wearer's foot, including being compressed to a fraction of its normal thickness without resiliently compressing the foot which has deformed it. It will be understood that the above discussion with respect to a boot shell capable of being modified to fit both size 11 and 12 feet will be applicable with obvious modifications to a boot shell usable over a range of three foot sizes with for example the large foot size being embodied by a substantially compressed foam lining with the insole in its lowest position, mid-size being embodied in a relatively noncompressed slow memory foam with the insole either in its lowest position or raised only slightly from the sole of the boot shell, while the smallest size may again be illustrated in FIG. 4.

It will also be understood that the above description is exemplary only of one possible set of fit and foam deformation conditions. Depending on the size of the boot shell selected vis-a-vis the two or three foot sizes to be covered, a substantially deformed lining with the insole in its lowest position could represent the condition of the boot on the largest foot size while a boot having a raised insole and a double lining of slow memory foam could represent the condition of the boot on the smallest foot size.

Referring now to FIG. 5, an alternate form of set screw 56 is disclosed comprising a screw having threads 58 only adjacent the bottom portion thereof. To prevent accidental removal of the set screw from internally threaded sleeve 48, the top thread 60 on the sleeve is not cut while the bottom thread 62 is peened over after the set screw is inserted.

FIG. 6 discloses another form of screw type insole elevating means including a screw 64 threaded within an internally threaded sleeve 66 molded or otherwise embedded within movable insole 30. Screw 64 rests upon and rotates with respect to metal washer 68 or the like emplaced in a detent in the sole 40 of the boot shell. This configuration also prevents the loss of set screws due to accidental unwinding.

Referring now to FIGS. 7 and 8, means for elevating insole 30 are disclosed including six sided cams 70 mounted on shafts 72 extending through an opening in the lateral side of the ski boot and slotted on one end to receive a screwdriver or the like to allow the cams to be rotated to raise or lower the insole. Each of the cams comprises three pairs of parallel surfaces, each pair of surfaces being spaced apart a greater or lesser distance than the remaining pairs so that the rotation of the cams to place differing pairs of surfaces in contact with insole 30 and the sole 40 of boot shell 12 raises or lowers the insole within the ski boot shell. While for convenience, the slow memory foam lining has not been illustrated in FIGS. 7-16 it will be understood that the in-

stant invention contemplates at all times the combination of the slow memory foam with the movable insole to produce a ski boot according to the instant invention.

Referring now to FIGS. 9 and 10, an insole height adjusting mechanism comprising an end slotted shaft 47 having a central support flange 76 dividing oppositely threaded portions 78 and 80. Blocks 82 and 84 having inwardly sloping wedge-shaped top surfaces are threaded on ends 78 and 80 respectively and the top surfaces are adapted to mate with the like inclined surfaces of insole support block 86. As will be understood, rotation of pin 74 causes blocks 82 and 84 to move toward or away from each other thus either raising or lowering block 86 resting thereon and consequently raising or lowering boot insole 30 with respect to sole 40. In an alternate embodiment a pair of pins each separately accessible from without the boot shell could be substituted for pin 74 to allow blocks 82 and 84 to be moved separately to allow tilting of the insole as well as the vertical movement thereof.

Referring now to FIGS. 11-13, set screws 88 are shown mounted within rotatable flanged sleeves 90. The flanges of the sleeves include gear teeth on their periphery adapted to contact cooperatively threaded pins 92 which extend through the side walls of the boot shell 12 and include slotted heads for ease of rotation. The top portions of set screws 88 are welded or otherwise rigidly affixed to metal plate 34 and thus it will be understood that rotation of the pins 92 to rotate sleeves 90 causes the set screws 88 to move upwardly or downwardly within sleeves 90 to raise or lower insole 30.

The embodiments of FIGS. 7-13 all allow for adjustment of the insole height through openings in the sides of the boot shell rather than through either the bottom or toe or heel of the boot shell. These arrangements are advantageous in that the insole height may be adjusted without either having to remove skis or with less possible interference with ski bindings, the majority of which grip the ski boot shell in the toe and heel areas.

Referring now to FIG. 14, a first air actuated insole lifting mechanism is disclosed comprising a pair of expandable bladders 94 formed of a durable rubber or the like interconnected by means of tubes 96 to spring and ball valves 98 mounted in openings 100 and 102 in the toe and heel portions of the boot shell. As will be understood, a conventional air pump illustrated in part at 104 may be interconnected with the valve 98 and air under pressure directed against the ball of the valve to compress the spring and allow the air to move into bladder 94. Upon removal of the air pump the spring forces the ball against the opening in the valve to prevent air from leaking or being forced out of the now inflated bladder 94. It is contemplated that alternate valve forms may be used satisfactorily in conjunction with bladders placed beneath the insole 30. Inflation of the bladders causes the insole member to rise vertically with respect to the boot shell sole 40. It will be understood that air may be removed from the bladder by insertion of a pin or the like in channel 106 to force the ball out of its sealing position to allow the air from the bladder to escape.

FIG. 15 discloses a second form of air actuated mechanism for raising or lowering the insole 30 within the boot shell 12 wherein a piston 108 is mounted within a cylinder 110 and adapted to be moved vertically therein in response to the insertion of air into this cylinder in the same manner described heretofore with

respect to FIG. 14. A conventional piston ring 112 is shown sealing piston 108 within cylinder 110. A pair of pistons spaced longitudinally with respect to the insole are illustrated and the top portion of each piston 108 bears against a metal plate 114 embedded within the rigid foam insole 30.

Finally, referring to FIG. 16 a fluid actuated piston and cylinder arrangement is disclosed including pistons 116 mounted within cylinders 118 and adapted to bear against metal plates 120 inset within the rigid foam insole. Fluid 122 fills the bottom portion of cylinder 118 and tube 124. Tubes 124 are threaded for a distance inwardly from their outer end 126 and a cooperatively threaded screw 128 having a slotted end portion adapted to receive a screwdriver is positioned therein such that rotation of the screw inwardly with respect to tube 124 tends to compress the fluid 122 thus raising the piston 116 and insole 30 supported thereon. Conventional means may be used to prevent the piston from being forced out of the cylinder.

It will be understood that the variety of mechanisms disclosed and discussed above for moving the insole vertically within the boot shell are disclosed for purposes of example, and it is contemplated that still other insole moving arrangements could be substituted therefor and used successfully in combination with the disclosed slow memory foam to provide a novel size adjustable ski boot.

The invention may be embodied in other specific forms without departing from the spirit or central characteristics thereof. The present embodiments are therefore to be considered in all respects as illustrative and not restrictive, the scope of the invention being indicated by the appended claims rather than by the foregoing description, and all changes which come within the meaning and range of equivalency of the claims are therefore to be embraced therein.

What is claimed is:

1. A ski boot having a molded plastic outer shell including:
 - a first member having an ankle portion, a heel portion, a sole portion and instep and toe portions of fixed external size;
 - a cuff member affixed to said first member and including fastener means holding said cuff member in surrounding relation to said ankle portion;
 - an insole sized to fit within said first member and substantially cover the bottom thereof including metal plate means on the bottom of said insole;
 - opening means in said plastic shell;
 - means for moving said insole vertically with respect to the sole portion of said first member to change the foot size of said ski boot, said means being accessible for actuation from without said plastic shell through said opening means while said boot is being worn;
 - slow memory expanded foam padding positioned adjacent the top and side surfaces of the instep portion of said first member, said padding adapted to be compressed by movement of said insole or the wearer's foot thereagainst with small resilient resistance; and
 - said slow memory expanded foam padding being of the closed cell vinyl type having a compression set value C_t of between 15 and 45% and a compression set value C_d of between 45 and 75%.
2. The ski boot of claim 1 wherein said slow memory foam lining is encased within a fabric sock and remov-

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able from said molded plastic shell.

3. The ski boot of claim 1 wherein said slow memory foam is of the closed cell vinyl type having a compression set value C_i of between 25 and 35%.

4. The ski boot of claim 1 wherein said slow memory foam is of the closed cell vinyl type having a compression set value C_d of between 55 to 65%.

5. The ski boot of claim 1 wherein said slow memory foam is of the closed cell vinyl type having a ball rebound resilience value of approximately 33%.

6. The ski boot of claim 3 wherein said slow memory foam is of the closed cell vinyl type having a compression set value C_d of between 55 to 65%.

7. The ski boot of claim 1 wherein said molded plastic outer shell is formed from polyurethane and has a durometer hardness of between 35 and 100.

8. In a ski boot having a molded plastic shell with a sole and an arched instep and toe portion of fixed size, means for adjusting the foot size of said boot comprising:

a layer of slow memory foam adjacent the inner surface of the arched instep and toe portion of said plastic shell;

said slow memory expanded foam padding being of the closed cell vinyl type having a compression set value C_i of between 15 and 45% and a compression set value C_d of between 45 and 75%;

an insole adapted to be moved vertically with respect to the sole of said plastic shell;

opening means extending through the walls of said plastic shell on or adjacent said sole; and

means for vertically moving said insole positioned therebetween and accessible for actuation through said opening means from without said plastic shell while said boot is being worn.

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9. The ski boot of claim 8 wherein said layer of slow memory foam is fastened directly to the inner surface of said plastic shell.

10. The ski boot of claim 8 wherein said slow memory foam is encased in a fabric sock, said sock being removable from said shell.

11. A ski boot having a molded plastic outer shell, said shell being of fixed size in the instep and toe area; a rigid plastic insole sized to substantially overlay the bottom of said shell and movable vertically within the cavity of said boot;

opening means in said plastic shell;

means for vertically moving said insole to change the foot size of said ski boot, said means being accessible for actuation from without said plastic shell through said opening means while said boot is being worn;

an inner sock positionable within and removable from said shell including a slow memory foam sandwiched between covering layers at the top and sides of the instep portion thereof; and

said slow memory expanded foam padding being of the closed cell vinyl type having a compression set value C_i of between 15 and 45% and a compression set value C_d of between 45 and 75%.

12. The ski boot of claim 11 wherein said insole includes a metal base portion and wherein said means for vertically moving said insole includes a metal plate means positioned on the sole of said shell and mounting set screw means adapted to bear against said metal base portion of said insole, said set screws being aligned with and movable through openings in the sole of said plastic shell.

13. The ski boot of claim 12 wherein said metal plate means is rigidly fastened to the inner surface of the sole of said plastic shell.

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