

[54] **SKI BOOT WITH ADJUSTABLE INSTEP
PLATE**

3,820,256 6/1974 Schoch 36/2.5 AL

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[51] Int. Cl. A43b 00/00

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

[57] **ABSTRACT**

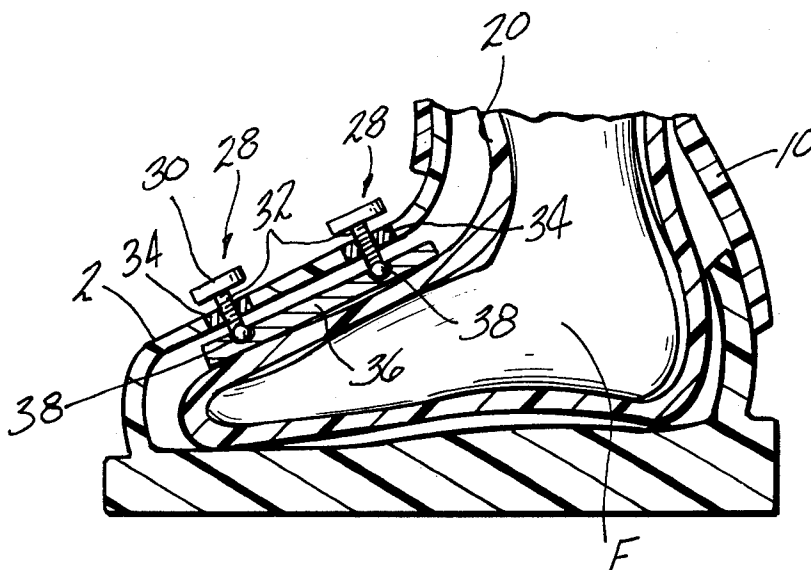
A ski boot having a one-piece portion which covers the forward portion of a wearer's foot. A plate is mounted inside of the boot so as to overlie the instep portion of the wearer's foot and threaded adjustment members extend through the one-piece portion of the boot to engage the plate so that the plate can be moved toward and away from the wearer's instep to vary tightness of fit of the boot.

[56] **References Cited**

UNITED STATES PATENTS

6 Claims, 3 Drawing Figures

3,599,351 8/1971 Check 36/2.5 AL



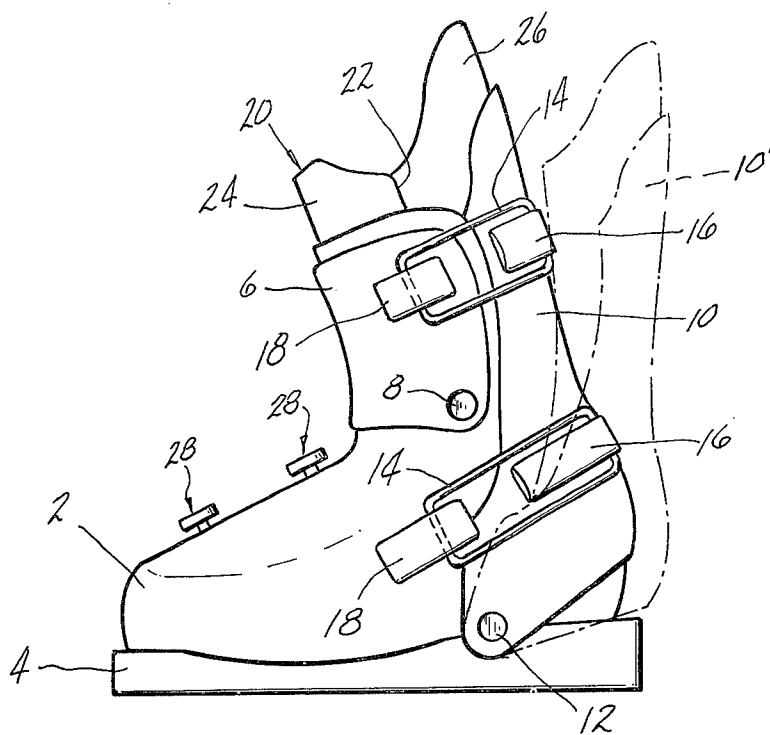


FIG-1

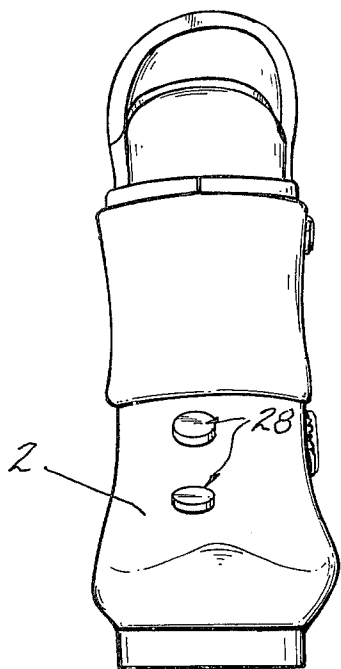


FIG-2

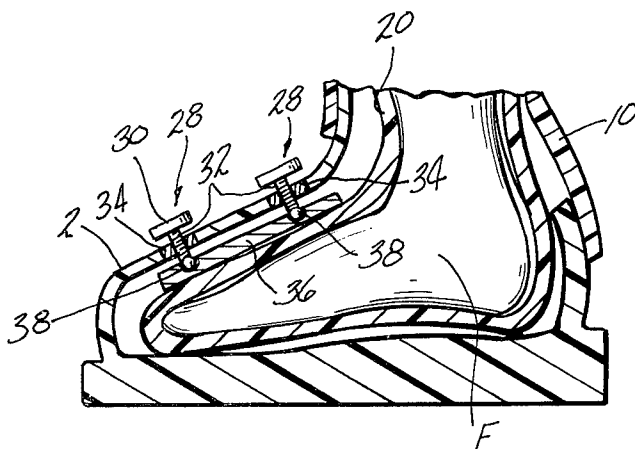


FIG-3

SKI BOOT WITH ADJUSTABLE INSTEP PLATE

This invention relates to a ski boot having an internal adjustment for varying the tightness with which the boot fits the wearer's foot. The tightness adjustment is accessible from the outside of the boot so that the boot need not be opened or removed from the ski or foot to be adjusted.

A very important factor to be considered in connection with ski boots is the tightness or lack thereof with which they fit the skier's foot. There are many provisions made in the ski boot art for establishing a preliminary fit for the wearer. Among these are internal pads which can be removed or added, injection of resinous foam material into a boot while worn, which upon curing provides a form fitting flexible fit, boot size per se, and strap and buckle combinations or laces. After the initial fitting of the boot is accomplished it is still further desirable to provide for varying the tightness of the fit. The boot should be relatively tight on the foot during skiing so as to enable the skier to properly control the skis, but should be capable of being loosened while not skiing, as for example, while on a lift or the like, so as to enable full blood circulation in the skier's foot. Even while skiing, there should be some provision for varying tightness in accordance with the type of skiing being done, as, for example, slalom, down hill, recreational, and the like.

There are a variety of different types of ski boots presently available for the skier, but this variety can be generally classified into two types according to how they are put on, namely, top entry boots, and rear or side entry boots. Top entry boots are provided with a top opening which receives the skier's leg and which extends forward through the instep portion of the boot so as to be capable of being temporarily enlarged enough to enable the wearer to insert his foot through the opening and into the boot. The opening extension is then closed about the skier's foot with laces, buckles, zippers or combinations of the above. The tightness of this type of boot can be varied while skiing by simple tightening or loosening the laces, buckles, or the like, as desired. This variation of tightness of fit usually does not permit an infinite variety of settings. Due to the nature of strap buckles the skier will often feel that one setting is too loose and the next possible setting is too tight.

With rear or side entry boots, the shell of the boot is usually formed with two or more components that are pivotally connected together. One of the components is designed to cover the forward portion of the foot, as for example the instep of the foot and that component is usually formed as a single unitary piece which is not split over the instep as are top entry boots. There is usually one other component which, as noted above, is pivoted to the first component for movement from a closed position to an open position. The other component overlies the heel or side of the skier's foot when in its closed position, and when in its open position is offset from the first boot portion sufficiently to permit the wearer to slide his foot forward or sideways into the first instep part of the boot. When worn, the two or more boot parts are usually held in their closed positions by buckled straps which encircle an ankle and lower leg part of the boot. Due to the unitary nature of the instep portion of the outer shell of a rear or side entry boot, the boot cannot be tightened down onto the wearer's foot by straps or laces on the shell instep. Thus

tightening is accomplished by internal pads, injected foam, internal straps, or the like, which cannot be varied without removing the wearer's foot from the boot or at least opening the boot. Tightness adjustment of this type of boot can involve guesswork and much inconvenience to the skier.

The ski boot of this invention includes an outer shell and an inner instep plate mounted within the outer shell. Adjustment controls are connected to the instep plate and are accessible to the skier on the outside of the shell without removing or unstrapping any part of the boot. The adjustment controls are manipulated by the skier to move the instep toward or away from the instep portion of the foot to respectively tighten or loosen the fit of the boot. The adjustment controls are preferably in the form of one or more threaded pins, however, they could also take the form of cams, wedges or other suitable mechanisms capable of shifting the position of the inner instep plate toward or away from the foot.

It is, therefore, an object of this invention to provide a ski boot having an adjustment for varying the tightness of fit of the boot on a wearer's foot.

It is another object of this invention to provide a ski boot of the character described wherein the tightness adjustment can be accomplished from the outside of the boot without unstrapping the boot or removing the wearer's foot therefrom.

It is an additional object of this invention to provide a ski boot of the character described wherein the boot includes an outer shell having a unitary instep portion and an internal instep overlying member which can be moved toward or away from the instep of the wearer's foot.

It is yet another object of this invention to provide a ski boot of the character described wherein a substantially infinite number of tightness fittings can be obtained.

These and other objects and advantages of this invention will become more readily apparent to those skilled in the art from the following detailed description of one embodiment of the invention taken in conjunction with the accompanying drawings, in which:

FIG. 1 is a side elevated view of an embodiment of a ski boot made in accordance with this invention, which ski boot is of the rear entry type;

FIG. 2 is a front elevated view of the boot of FIG. 1; and

FIG. 3 is a fragmented vertical sectional view of the boot of FIG. 1 showing the internal instep plate and adjustments therefor.

Referring now to the drawings, there is shown a ski boot of the rear entry variety. The boot includes a relatively flexible outer shell having a forward part 2 which is formed from a single unitary piece of material and which overlies the instep and front portion of the wearer's foot and leg. For convenience, this part of the boot will be referred to as the instep portion of the boot shell, or the shell instep part. The shell instep part 2 is fixedly secured to a sole part 4 and also carries a broad cuff 6 secured thereto by means of a rivet 8. The boot also includes a rear shell part 10 which overlies the heel and rear part of the foot and lower leg of the wearer. For convenience the rear part 10 of the shell can be referred to as the shell heel. The shell heel 10 is pivotally connected to the shell instep 2 and sole 4 by means of a pair of pins 12 (only one of which is shown) on oppo-

site sides of the boot. The permit entry of the skier's foot into the boot, the shell heel 10 is pivoted rearwardly about the pins 12 to the position 10' (shown in phantom) and then returned to its original position to hold the foot within the boot. There are provided a pair of cable loops 14 which are secured to extensions (not shown) of the cuff 5 by means of mounts 16 and which are releasably engaged by conventional buckles 18 mounted on the shell instep part 2 to provide a releasable connection between the shell instep 2 and shell heel 10.

There is also provided an inner boot member or liner denoted generally by the numeral 20 which is formed from soft resilient material which is disposed inside of the shell and which actually receives the skier's foot. This liner is split by a vertically extending parting line 22 so as to form a front liner part 24 and a rear liner part 26 which are pivotable with respect to each other by reason of the resilient nature of the material from which the liner 20 is made. Thus the rear liner part 26 will pivot back with the shell heel part 10 to permit entry of the skier's foot into the boot. Mounted on the upper surface of the instep part 2 of the shell are a pair of adjustment members 28.

Referring now to FIG. 3 there are shown details of the tightness adjustment mechanism of the boot of this invention. The adjustment members 28 include an enlarged head part 30 which is outside of the shell and which is preferably large enough to be easily manipulated by a skier even with gloves on. A threaded shank 32 is secured to the head 30 for rotation therewith. The shank 32 is threaded through an internally threaded grommet 34 which is embedded in the instep part 2 of the shell. The shank 32 extends into the interior of the shell and is rotatably connected to an internal plate member 36 which overlies the instep part of the boot liner 20. The shank 32 can be connected to the plate 36 by means of a ball and socket joint 38 or the like which permits rotation of the shank 32 to be converted to upward or downward movement of the plate 36 without imparting rotational movement to the plate 36. The plate 36 is preferably contoured to the shape of the instep of the foot F and is formed from a relatively rigid material. The plate 36 may be provided with some padding if desired, however.

Operation of the boot is as follows. Once the skier's foot is inserted into the boot and the boot is closed, the adjustment members 28 are manipulated to move the plate 36 against or away from the skier's instep, as desired. By reason of the threaded connection between the boot shell and adjustment members, a substantially infinite number of tightness settings can be provided for the plate 36 within a limited range. Readjustment of tightness is simple and can be accomplished without opening the boot, taking the boot off of the skis, or

even removing gloves. The skier can easily and quickly establish a tight fitting for skiing and a loose fitting for lift riding or the like, and can vary the fitting for different types of skiing.

Since many changes and variations of the disclosed embodiment of the invention may be made without departing from the inventive concept, it is not intended to limit the invention otherwise than as required by the appended claims.

What is claimed is:

1. A boot comprising an outer shell of relatively flexible material, said outer shell having an instep portion being formed as an unitary member; a plate member disposed within said boot inwardly of said instep portion, said plate member being positioned to overlie the instep of a foot disposed in said boot; and adjustment means extending through said instep portion of said boot shell, said adjustment means engaging said plate and being operative to move said plate toward and away from the instep of a foot disposed in said boot to vary the tightness of fit of said boot on the foot, and said adjustment means being manipulatable from the exterior of said boot to permit tightness adjustment without removing the foot from said boot.

2. The boot of claim 1 wherein said adjustment means includes at least one threaded member extending through a threaded opening in said instep portion of said shell.

3. The boot of claim 1, wherein said heel portion of said shell is pivotally connected to said instep portion of said shell and said boot is a rear-entry variety.

4. The boot of claim 1, wherein said plate member is shaped to conform generally to the shape of the instep portion of a human foot.

5. The boot of claim 1, wherein said plate member is formed from relatively rigid material.

6. A boot comprising an outer shell having at least two parts pivotally connected together to permit entry of a foot into said boot, one of said parts being a one piece instep member made of relatively flexible material and adapted to receive the instep of the foot; a plate mounted within said instep member, said plate being movable with respect to said instep member toward and away from the instep of a foot disposed in said boot; at least one threaded opening formed in said instep member of said shell; threaded adjustment means mounted in said threaded opening and accessible from the exterior of said shell for manipulation, said adjustment means engaging said plate and being operable when rotated in said threaded opening to move said plate toward and away from the instep of the foot disposed in said boot to vary the tightness with which the boot fits on the foot.

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UNITED STATES PATENT OFFICE
CERTIFICATE OF CORRECTION

Patent No. 3,883,964 Dated May 20, 1975

Inventor(s) Donald R. Check

It is certified that error appears in the above-identified patent and that said Letters Patent are hereby corrected as shown below:

In Column 3, first line please delete "The" and insert
--To--;

In Column 3, line 7, please delete "5" and insert --6--;

In Column 4, Claim 3, line 31, please insert after
"is" and before "a" the word --of--.

Signed and Sealed this

eleventh Day of *November* 1975

[SEAL]

Attest:

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Attesting Officer

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Commissioner of Patents and Trademarks