

July 21, 1970

M. W. DALEBOUT

3,521,385

SKI BOOT

Filed May 2, 1968

3 Sheets-Sheet 1

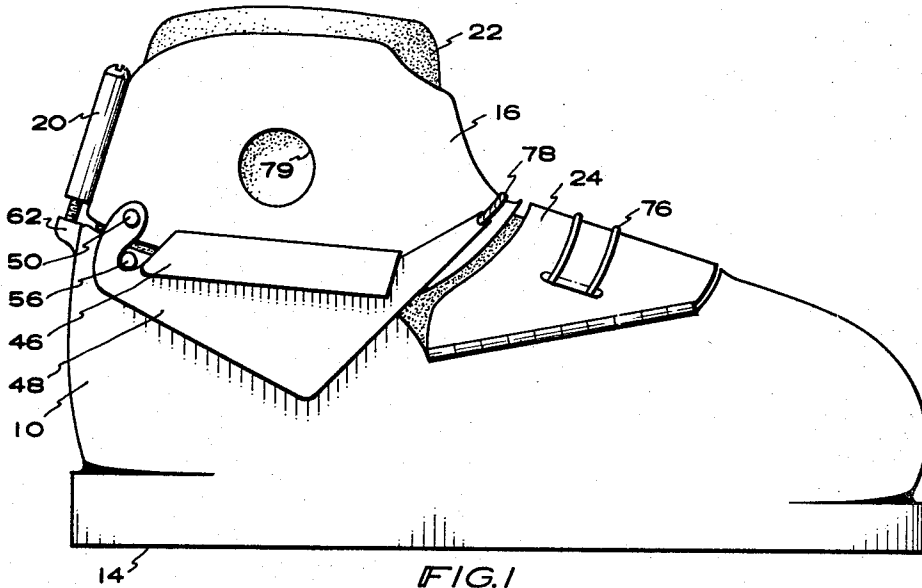


FIG. 1

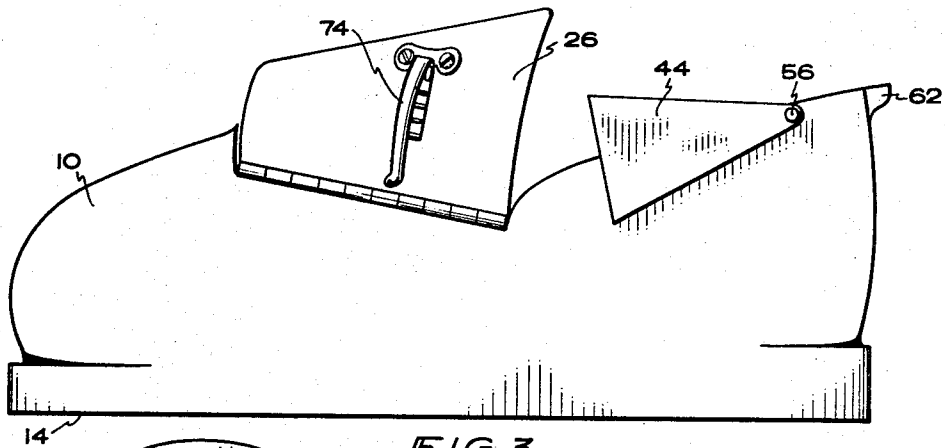


FIG. 3

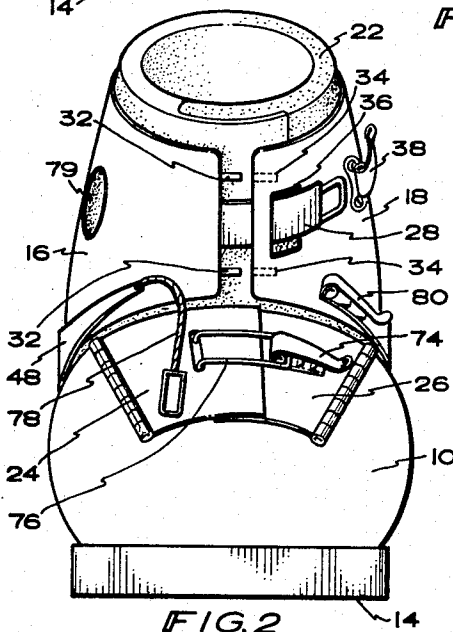


FIG. 2

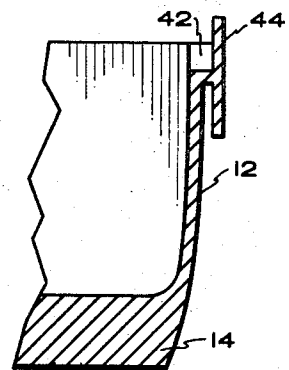


FIG. 7

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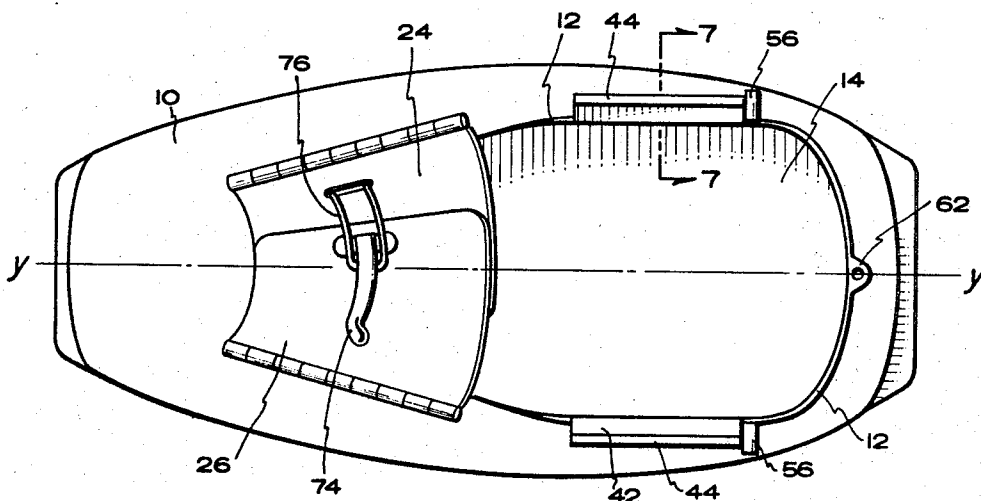


FIG. 4

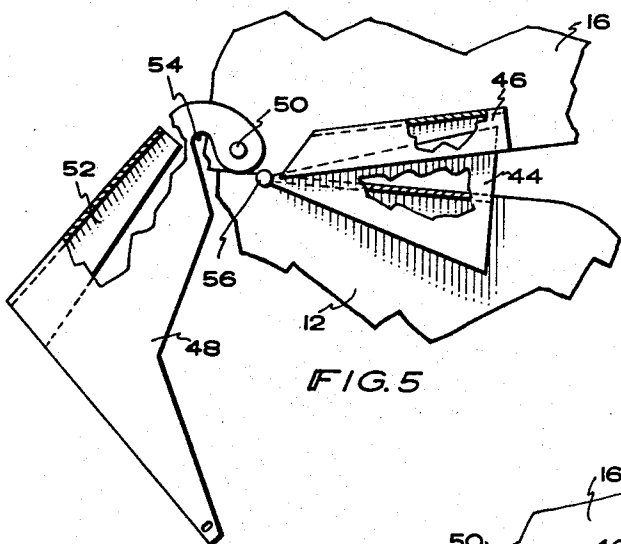


FIG. 5

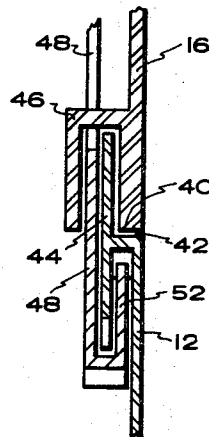


FIG. 8

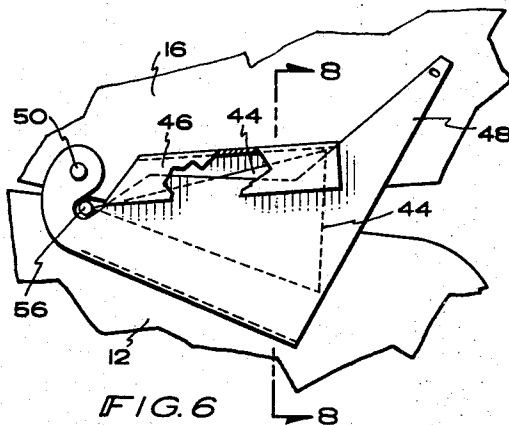


FIG. 6

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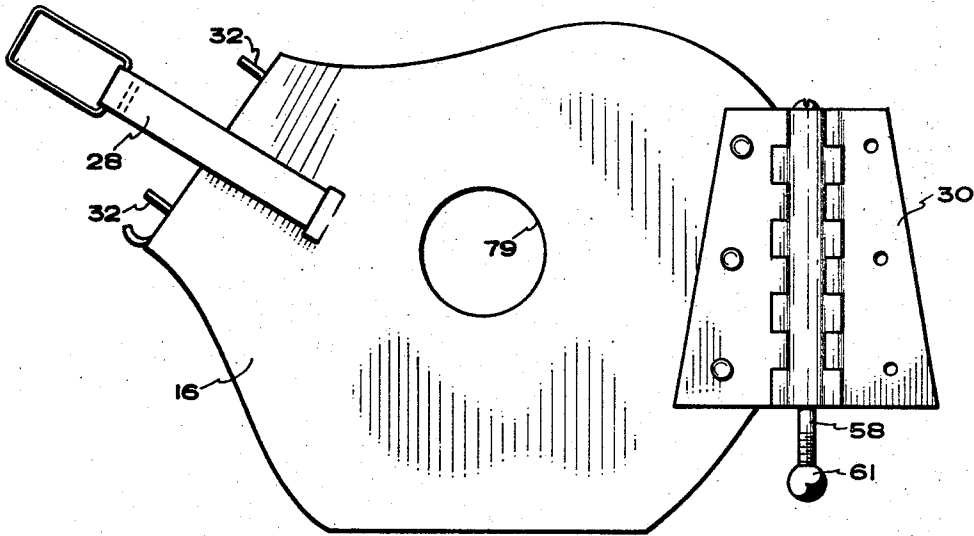


FIG. 9

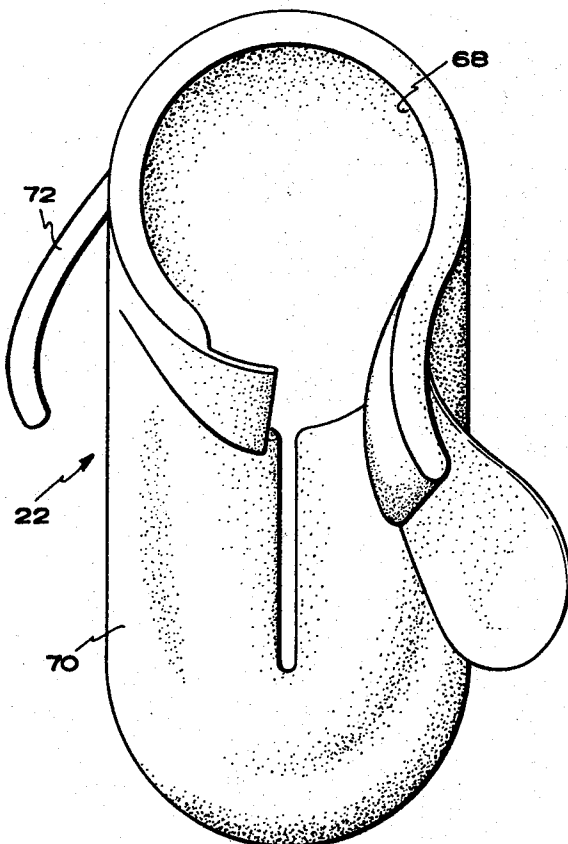


FIG. 11

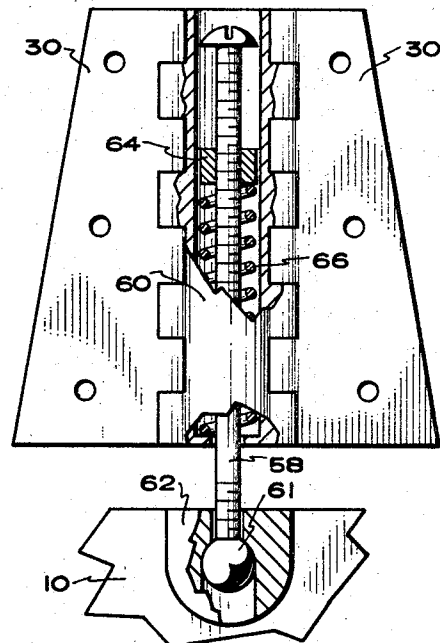


FIG. 10

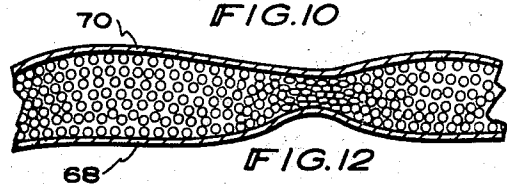


FIG. 12

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U.S. Cl. 36—2.5

11 Claims

ABSTRACT OF THE DISCLOSURE

A ski boot which includes a low cut rigid oxford type lower shell having spaced sidewalls affixed to the lower shell's sole, first and second side pieces hinged together at one end to form a rigid ankle shell, means for fixedly connecting the side pieces about the ankle, and means for connecting the side pieces to the sidewalls of the lower shell to rock back and forth with a scissor-like action on the top edge of the sidewalls in a direction substantially parallel with the longitudinal axis of the lower shell. Biasing means can be affixed to the ankle shell for urging it to a predetermined position on the lower shell, and an inner boot, molded to the shape of the individual's foot, can be provided in the lower shell and ankle shell for snugly securing the individual's foot therein.

BACKGROUND OF THE INVENTION

This invention relates to a boot for skiers which provides positive foot control.

Boots are used for skiing which support the user's foot and ankle against undesirable movement. To accomplish this the boots are generally constructed from a heavy leather or plastic material and because of this heavy construction some desirable foot and ankle movement is restricted. Attempts have been made to overcome this problem by constructing the boot from a hardened resin or metal with pivotally mounted cuffs which allow the user to tilt his ankle forward in the boot. When such devices are used some of the boot's desirable support characteristics can be adversely affected. For example, the lateral support provided by the boot which is essential for skiing edge control is often reduced, especially when the cuff is pivotally connected at single points on opposite sides of the boot.

SUMMARY OF THE INVENTION

This invention provides a ski boot constructed from a rigid plastic or metal with a rocking ankle cuff mounted on an oxford type lower boot.

In its broadest form, the invention includes a low cut oxford type lower shell having spaced sidewalls affixed along their bottom edge to the boot's sole, first and second side pieces hinged together at one end to form an ankle shell sized to fit around the ankle of an individual, means for fixedly connecting the side pieces about said ankle, and means for connecting said side pieces to the sidewalls of the lower shell to rock in a scissor-like manner on the top edge of said sidewalls in a direction substantially parallel with the longitudinal axis of the lower boot.

In a preferred embodiment biasing means can be affixed to the hinged end of the side pieces and to the heel end of the lower shell for urging the ankle cuff to a predetermined static position on the sidewalls of the lower shell.

In another embodiment an inner boot, molded to the shape of the individual's foot, is provided within the lower shell and ankle shell for retaining the individual's foot snugly therein.

In still another special modification pressure control

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flaps are provided on the lower shell for controlling the pressure of the inner boot on the individual's foot.

BRIEF DESCRIPTION OF THE DRAWINGS

So that the invention may be more readily understood and carried into effect, reference is made to the accompanying drawings which are offered by way of example only and are not to be taken as limiting the invention, the scope of which is defined by the appended claims which are intended to embrace equivalent structures.

FIG. 1 is a side view of the ski boot of this invention.

FIG. 2 is a front view of the ski boot with the boot's side pieces shown partially open.

FIG. 3 is a plan elevation view of the low cut oxford type lower boot with an open pressure flap.

FIG. 4 is a top view of the oxford type lower boot with closed pressure flaps.

FIG. 5 is a plan view of one type of connecting means for securing the side pieces of the boot's shell to the lower boot. For purpose of clarity, the connecting means is shown partially broken away and hidden lines are shown in phantom.

FIG. 6 is a side view of the connecting means shown in FIG. 5 in its closed assembled position. For purposes of clarity the T-shaped positioning wedge is shown in phantom.

FIG. 7 is a sectional view taken in the plane of line 7—7 of FIG. 4 looking in the direction of the arrows.

FIG. 8 is a sectional view taken in the plane of line 8—8 of FIG. 6 looking in the direction of the arrows.

FIG. 9 is a plan elevation view of the inside of one of the side pieces of the boot's shell and a hinge for interconnecting the side piece to a mating piece.

FIG. 10 is a view of one type of biasing means for urging the side pieces to a predetermined static position on the lower shell. For purposes of clarity, the biasing means is shown partially broken away.

FIG. 11 is a top view of one type of inner boot suitable for placement in the low cut boot and side pieces.

FIG. 12 is a partial sectional view taken through a segment of the inner boot.

DESCRIPTION OF THE PREFERRED EMBODIMENT

Referring now more particularly to the drawings there is shown a ski boot which includes a low cut oxford type lower shell 10 having upwardly extending sidewalls 12 attached to the boot's bottom sole 14 and an upper shell in the form of an ankle cuff sized to fit around and support the ankle of the individual using the boot. The upper shell is formed from side pieces 16 and 18 which are hinged together at one end. The oxford lower shell 10 and side pieces 16 and 18 are constructed from a substantially rigid material such as fiberglass, plastic or metal.

The ankle cuff is secured to the sidewalls of the oxford boot with connecting means, hereinafter described, which allow the cuff to rock back and forth with a scissor-like action on the top edge of the sidewalls in a direction substantially parallel with the longitudinal axis of the oxford shell. Biasing means 20 are secured to the hinged end of the side pieces and to the heel of the oxford shell 10 for urging the cuff to a predetermined position on shell 10.

An inner boot 22 is positioned in the lower shell 10 and in the ankle cuff for conforming the boot to the foot and for preventing water leakage between the lower shell and ankle cuff. Hinged flaps 24 and 26 and an adjusting strap 28 can be used as hereinafter described to modify the pressure of the inner boot 22 on the foot.

As indicated, side pieces 16 and 18, connected together at one end with hinge 30, are shaped to wrap around the ankle of the individual using the boot to form an ankle cuff. Detent pins 32 affixed to side piece 16 coact with de-

tents 34 in the opposite side piece 18 to hold the pieces in a fixed position with respect to each other when they are closed about the ankle. When thus positioned, strap 28 which is connected at one end to the interior wall of side pieces 16 is passed through opening 36 in piece 18 and is secured to said side piece 18 with buckle 38. The pressure on the ankle portion of inner boot 22 can be modified by adjusting the tension on strap 28.

The ankle cuff is the upper shell of the boot of this invention. This cuff is connected to lower shell 10 so that bottom edges 40 of side pieces 16 and 18 rock back and forth on the top edges 42 of sidewalls 12 in a direction substantially parallel with the longitudinal axis y—y of the shell. To prevent lateral movement of the cuff as it rocks on the lower shell, T-shaped positioning wedges 44 are secured to sidewalls 12 proximate top edges 42 which coat with L-shaped flanges 46 appended to the outside surfaces of pieces 16 and 18. Latches 48 are pivotally connected with shaft 50 to side pieces 16 and 18 for pulling flanges 46 into a coacting relationship with positioning wedges 44 and for locking the wedges in a side by side relationship with flanges 46. The latches are elongated U-shaped members with a locking detent 54 provided proximate one end to coact with pin 56 affixed to the rear end of T-shaped wedge 44. When latch 48 is rotated to a closed position the locking detent 54 is positioned to receive pin 56 and pull the bottom edge 40 of the side piece into contact with the top edge 42 of sidewall 12. The front wall of latch 48 also moves under the outwardly extending lip of flange 46 and the latches rear wall 52 moves behind the downwardly extending leg of T-shaped aligning wedge 44. By using a construction of this type the rigid cuff easily rocks back and forth on the lower shell's top edges 42 in a direction substantially parallel with the longitudinal axis of the shell while being securely affixed to shell 10 in a fashion which prevents transversal movement.

It is preferred that the boot's ankle cuff be held in a predetermined upright position on lower shell 10 except when a rocking force is applied to the cuff by the skier when he bends his ankle forward. For this reason the hinged end of the cuff is connected with biasing means to the lower shell's heel end. Threaded rod 58 is spring loaded at one end in housing 60 affixed to hinge 30, as illustrated in FIG. 10, and is pivotally connected with ball 61 at its other end to ported lip 62 which is affixed to the heel end of lower shell 10. When the cuff is rocked forward spring 66 in housing 60 is compressed to urge the cuff back to its normal upright position when the rocking force is withdrawn. The force required to rock the cuff can be modified by adjusting the position of nut 64 on rod 58.

Inner boots 22 are positioned within lower shell 10 and the upper ankle shell for securing the foot snugly within the boot's lower and upper shells. While any conventional inner boot can be used for this purpose it is preferred to use one having an interior shape which conforms with the shape of the foot in contact therewith. To accomplish this, an inner boot having an envelope structure, i.e., an inner wall 68 and a spaced outer wall 70, is filled with a suitable material or potting compound which flows as a liquid into the opening between sidewalls 68 and 70 through an umbilical tube 72 while the individual's foot is positioned in the inner boot and the inner boot is in the outer shell. The material is then hardened or expanded in the compartment between sidewalls 68 and 70 and it thereafter retains the shape of the foot and acts as a thermo insulator while the boot exactly fits the foot of the wearer. The material used in the compartment between the sidewalls of the inner boot could be an expanded polystyrene, a urethane elastomer, or similar material which can be obtained in various degrees of hardness. Once the foam has solidified umbilical tube 72 is cut and a plug is placed over port 79 in side piece 16 through which tube 72 protrudes when the inner boot is being filled.

So that the pressure on the inner boot can be adjusted to each individual liking, hinged pressure flaps 24 and 26

are connected to the opposite sidewalls of lower shell 10. The flaps overlap each other and are interconnected together with buckle 74 connected to flap 26 and coacting loop connector 76 connected to flap 24. As previously indicated, the pressure of the inner boot on the ankle can be adjusted with buckle 38 and coacting strap 28.

The boot of this invention is fastened to an individual's foot by first releasing buckle 38 which allows hinged side pieces 16 and 18 to open. The individual using the boot then places his foot into the open inner boot in lower shell 10. When thus positioned, the side pieces 16 and 18 are interconnected about the ankle, as previously described, while being positioned between the upwardly extending portion of T-shaped wedges 44 so that the downwardly protruding lip of the L-shaped flanges 46 drop over the wedges 44. Latches 48 are then rotated into contact with pins 56 thereby urging the bottom surface 40 of the side pieces 16 and 18 downwardly onto the top surface 42 of sidewalls 12. Latches 48 are then interconnected together with cable 78 which wraps around the front portion of the side pieces and attaches to buckle 80 in a conventional fashion. The pressure on the inner boot can then be adjusted with hinged flaps 24 and 26 which are buckled together.

Whereas there is here illustrated and specifically described a certain preferred construction which is presently regarded as the best mode of carrying out the invention, it should be understood that various changes can be made and other construction adopted without departing from the inventive subject matter particularly pointed out and claimed.

I claim:

1. a boot for supporting the foot and ankle of an individual which comprises: a low cut boot having first and second spaced sidewalls each connected to a boot sole; first and second ankle side pieces; hinge means for swingingly connecting said ankle side pieces together to form an ankle cuff sized to fit around the ankle of said individual; means connected to said ankle side pieces for locking said side pieces together about said ankle; first connecting means for connecting said first side piece to said first sidewall of said low cut boot to rock back and forth in a direction substantially parallel with the longitudinal axis of said low cut boot; side piece support means attached to said second sidewall proximate the top edge of said second sidewall for removably supporting said second ankle side piece on said second sidewall; and second connecting means for holding said second side piece on said support means to rock back and forth in a direction substantially parallel with the longitudinal axis of said low cut boot when said first and said second side pieces are connected together and for releasing said second side piece from said support means for movement away from said second sidewall during placement of said individual's foot into and out of the low cut boot.

2. The boot of claim 1 wherein biasing means are connected to said first and said second ankle side pieces and to said low cut boot for urging said side pieces to a predetermined position on said low cut boot.

3. The boot of claim 2 wherein said biasing means are connected to the heel end of said low cut boot and to the hinged end of the side pieces.

4. The boot of claim 1 wherein inner boot means are positioned in said low cut boot and the ankle cuff formed by said ankle side pieces for holding said foot and said ankle snugly within said low cut boot and said ankle cuff.

5. The boot of claim 4 wherein said inner boot is molded to fit the shape of said foot.

6. The boot of claim 4 wherein pressure control means are secured to said ankle cuff for adjusting the pressure of aid inner boot on said ankle.

7. The boot of claim 6 wherein pressure control means are secured to said low cut boot for adjusting the pressure of said inner boot on said ankle.

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8. The boot of claim 1 wherein said second connecting means comprises an upwardly extending flange affixed to the second side wall of said low cut boot proximate said top edge of said second sidewall which coacts with a downwardly extending mating flange affixed to the said second side piece.

9. The boot of claim 8 wherein said upwardly extending flange is held in a coacting rocking relationship with said downwardly extending mating flange with locking means rotatably mounted to said second side pieces.

10. The boot in claim 9 wherein biasing means are connected to said first and second ankle side pieces and to said low cut boot for urging said side pieces to a predetermined position on said low cut boot.

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11. The boot of claim 10 wherein inner boot means are positioned in said low cut boot and the ankle cuff formed by said side pieces for holding said foot and said ankle snugly within said low cut boot and said ankle cuff.

References Cited

UNITED STATES PATENTS

3,239,952	3/1966	Lange et al.	36—2.5
3,374,561	3/1968	Werner et al.	36—2.5
3,405,463	10/1968	Werner	36—2.5
3,419,974	1/1969	Lange	36—2.5

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