United States Patent [19]

Herunter

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[54] **SKI BOOT OR INNER SHOE FOR A SKI BOOT**

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[30] **Foreign Application Priority Data**

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

[51] **Int. Cl.** **A43b**

[58] **Field of Search** ..... 36/2.5 R, 2.5 AL, 36/71

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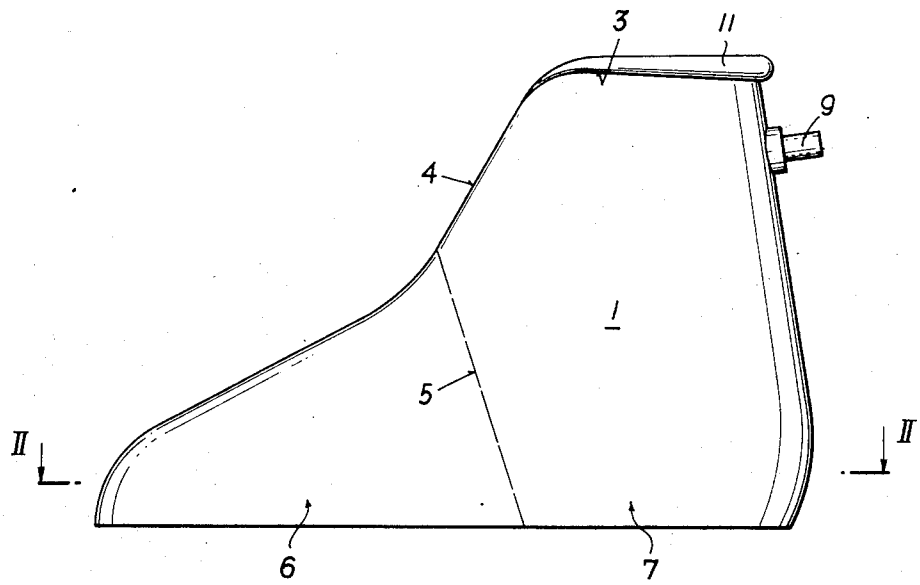
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[57] **ABSTRACT**

A shoe construction adaptable for use as a ski boot or as an inner shoe for a ski boot. The shoe has in its forward portion ahead of the position of the arch of the foot a preformed cushioning. The rear portion of the shoe includes a lining attached to the shoe to define a hollow space between the lining and the confines of the shoe. With the wearer's foot positioned within the shoe and oriented by the preformed cushioning, the hollow space is filled with a foamable material which assumes the contours of the foot and ankle as the foam sets.

6 Claims, 4 Drawing Figures



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SHEET 1 OF 2

FIG. 1

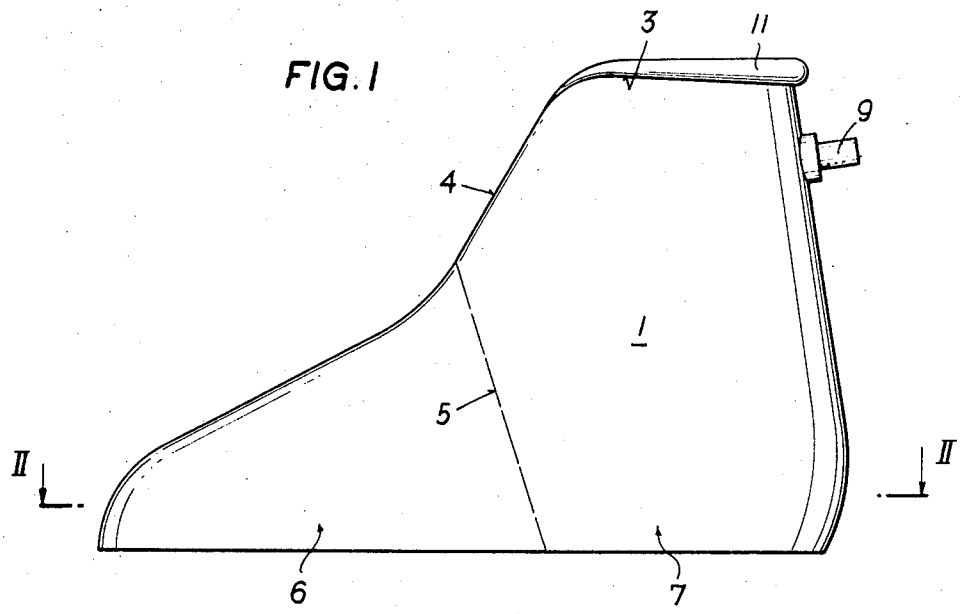
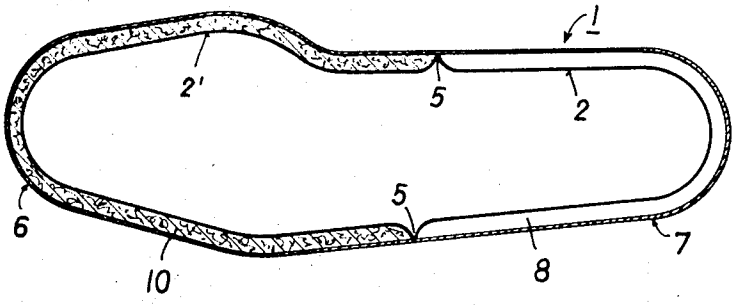


FIG. 2



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FIG. 3

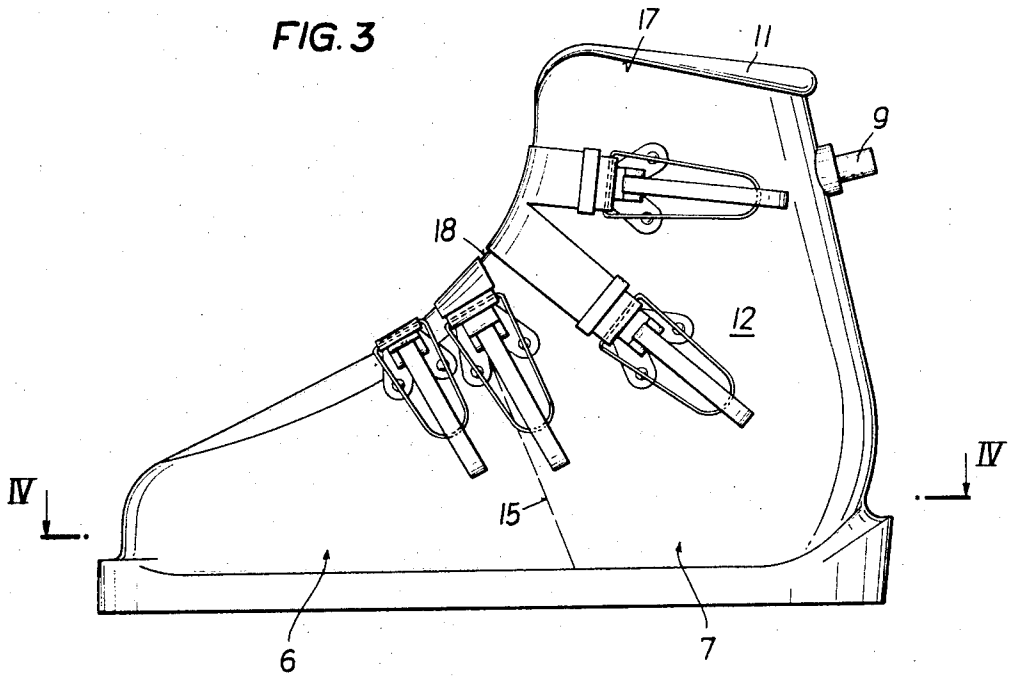
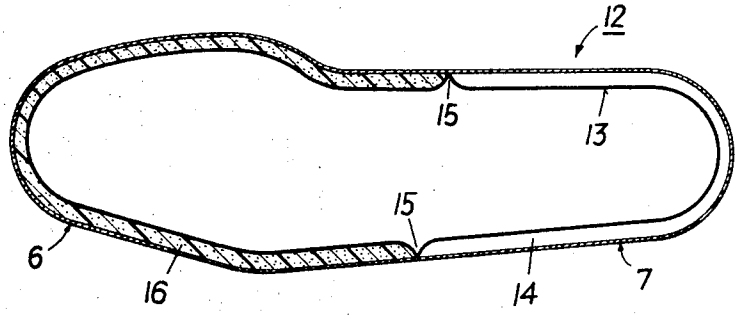


FIG. 4



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SKI BOOT OR INNER SHOE FOR A SKI BOOT

The invention relates to a ski boot, or an inside shoe for ski boots, which has a hollow space limited, on the one hand, by a lining fitting against the foot and, on the other hand, by the confines of the shoe, into which lining foamable material is injected while the shoe is on the foot of the wearer. Such a development brings about the advantage that the shoe can be fitted precisely to the foot so that a firm fit develops and pressure points are avoided. However, a disadvantage of such a development of the shoe resides in the fact that while the position of the foot inside the shoe is fixed after hardening of the foam material, there is no guarantee that the axis of the foot in this position also coincides with the axis of the shoe such that the axis of the foot is in the correct position with reference to the axis of the ski when the shoe is in the binding. If the axis of the foot is not correctly referenced to the axis of the ski, control of the ski becomes difficult, and in such a case the good fit of the foot inside the shoe turns out to be a disadvantage with regard to skiing technique.

It is the object of the invention to eliminate this disadvantage in the case of a ski boot, or an inside shoe for ski boots, of this type. Essentially the invention consists in the interior of the front part of the shoe being preformed or being provided with a preformed cushioning, and the interior rear part of the shoe having a hollow space between the confines of the shoe and a lining fitting against the foot, a foamable material being injected within this space while the foot is in the shoe. As a result of the fact that the front part of the shoe has been preformed on the inside, the correct position of the foot in the shoe is assured, so that there is a further assurance that after hardening of the foam in the hollow space, the axis of the foot coincides with the axis of the shoe. Even if in the front part of the shoe the inside shape of the shoe is adapted less precisely to the shape of the foot than it would be by injection of the foamable material thereabout, still the deviations from the correct position of the foot are largely avoided. The precise adaptation of the inside shape of the shoe to the shape of the foot does exist in the rear part of the shoe, however, and it is precisely in this area where the firm fit of the foot is decisive for the control of the skis. Thus, through the invention, the advantages of a precise adaptation to the shape of the foot through injection of the cushioning while the shoe is on the foot are combined with the advantages of a shoe preformed on the inside to assure the precise position of the axis of the foot with regard to the axis of the shoe without there being any need of putting up with the disadvantages of known arrangements, namely, the uncertain position of the foot within the shoe, on the one hand, and the defective adaptation to the shape of the foot, on the other hand. In this case the shoe in its front area can be provided with a cushion consisting of foam material or the like inserted in the customary manner, or the cushioning in the front part of the shoe can also be produced by way of injection of foamable material into a hollow space made up by the lin-ing and by the confines of the shoe, but the injection of the foamable material in this case is not accomplished while the foot is in the shoe, but instead on a last.

According to a preferred embodiment of the invention, the inner preformed portion of the shoe ex-tends across the toe part and along both sides beyond the ball of the foot to the area of the arch, while the hollow space which is filled with foamable material while the foot is in the shoe extends from the arch area over the ankle bones and the heel to the upper edge of the shoe. According to the invention the construction may be made in a simple manner in such a way that the lining limiting the hollow space is connected along its edges to the preformed part of the shoe within the confines of the shoe.

In the drawings the invention has been explained schematically on the basis of illustrative embodiments:

FIG. 1 is a side view of an inside shoe for a ski boot;

FIG. 2 is a cross-sectional view taken along line II-II of FIG. 1;

FIG. 3 is a side view of a ski boot; and

FIG. 4 is a cross-sectional view taken along line IV-IV of FIG. 3.

In FIGS. 1 and 2 the numeral 1 represents the confines of the inside shoe. Numeral 2 is a lining which is connected with the confines 1 of the inside shoe merely along a line 3 at the upper edge of the shaft of the shoe, along edge 4 of the slit passing across the instep and along a line 5 which separates the front part 6 of the shoe from its rear part 7. Otherwise, a hollow space 8 is formed between the lining 2 and the confines of the shoe which runs from the instep around the heel and via the ankle bone up to the upper edge 3 of the inside shoe, that is to say, therefore, across the so-called rear quarter of it which has been designated by 7. Foamable material is inserted via a nipple 9 into the hollow space 8 while the foot is in the shoe, which material fills this hollow space and thereby reproduces the precise shape of the foot after hardening. The nipple 9 then can be re-moved after hardening.

In the front part 6, that is to say in the toe part, and on both sides across the ball of the foot up to the arch area, the shoe has a preformed cushion 10 which centers the foot in the correct position within the shoe while the foamable material is injected into hollow space 8 and until the foam solidifies in hollow space 8. This cushioning 10 is made in the customary manner and is formed, for example, by a layer of foamed substance. Alternatively, a lining, which is indicated by 2', can extend across the front part of the shoe, and the hollow area 10 can be filled with in-jected foamable material while the shoe is on the last. In this case it is effective to make a separating line 5, by way of a seam, which connects the lining 2 with the confines 1 of the shoe.

The numeral 11 represents a customary padded reinforcement.

In FIGS. 3 and 4 a ski boot is shown which is used without an inside shoe. In this case the confines of the shoe comprise a shell 12, which consists, for example, of plastic or metal or which also can be formed by a customary shaft made of leather or plastic without lining. Within this confine there again is a lining 13 which, together with the confine 12, encloses a hollow space 14, which extends across the entire rear part of the shoe up to a borderline 15, indicated by a broken line. The front part 6 of the shoe lies in front of this borderline 15, and the rear part 7 behind the borderline 15. In the front part 6 of the shoe there is a cushioning 16 inside confine 12 which again ex-tends across the toe part and on both sides across the ball of the foot up to the area of the arch, and which can be made in the same manner as the cushioning 10 according to the em-

bodiment in FIGS. **1** and **2**. At the separating line **15**, the lining **13** is welded, glued or sewn to the confines **12** of the ski boot so that the hollow space **14** again extends across the part of the ski boot from the instep around the heel and via the ankle bone up to the upper edge **17** of the ski boot, just as in the case of the embodiment according to FIGS. **1** and **2**. Again, lining **13** is joined to the confines **12** of the ski boot along the upper edge **17** and along front edge **18** of the shaft. Again, a foamable mass is injected into the hollow space **14** via a nipple **9**, which is later removed, while the foot of the wearer is in the ski boot and is held in its position by the preformed cushioning **16**.

A plastic mass, such as for example a foamable mixture of polyisocyanates or a foamable mixture of elastomers, can be used as a foamable mass.

What is claimed is:

1. A shoe construction, said shoe having front and rear interior parts, the front interior part being provided with a cushioning preformed to orient the position of the foot with respect to the shoe when the foot

is inserted within the shoe, and the rear interior part including a lining attached to the shoe to define a hollow space between the lining and the confines of the shoe into which hollow space a foamable material is injectable while the shoe is on the foot of the wearer.

2. A shoe as set forth in claim **1**, wherein the preformed cushioning extends across the toes and across both sides of the foot past the ball to the area of the arch, and the hollow space extends from the arch area, across the ankle bones and the heel to the upper edge of the shoe.

3. A shoe as set forth in claim **1**, wherein said lining is connected at its edges to the preformed cushioning.

4. A shoe as set forth in claim **2**, wherein said lining is connected at its edges to the preformed cushioning.

5. A shoe construction as set forth in claim **1** wherein said shoe is a ski boot.

6. A shoe construction as set forth in claim **1** wherein said shoe is an inner shoe for a ski boot.

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