United States Patent [19]

Haff

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[54] **ADJUSTABLE HARNESS FOR SKI BOOT**

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[52] **U.S. Cl.** ..... **280/11.35 C,** 280/11.13 W

[51] **Int. Cl.** **A63c 9/00**

[58] **Field of Search** 280/11.35 C, 11.13 W, 11.35 X, 280/11.35 A, 11.35 R

[56] **References Cited**

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[57] **ABSTRACT**

A ski harness for securing a ski boot to a ski includes adjustment features which permit canting of the boot relative to the ski and means whereby the boot harness may be locked into a variety of angular positions. The device also provides toe-in/toe-out adjustablility as well as fore and aft longitudinal movement.

4 Claims, 9 Drawing Figures

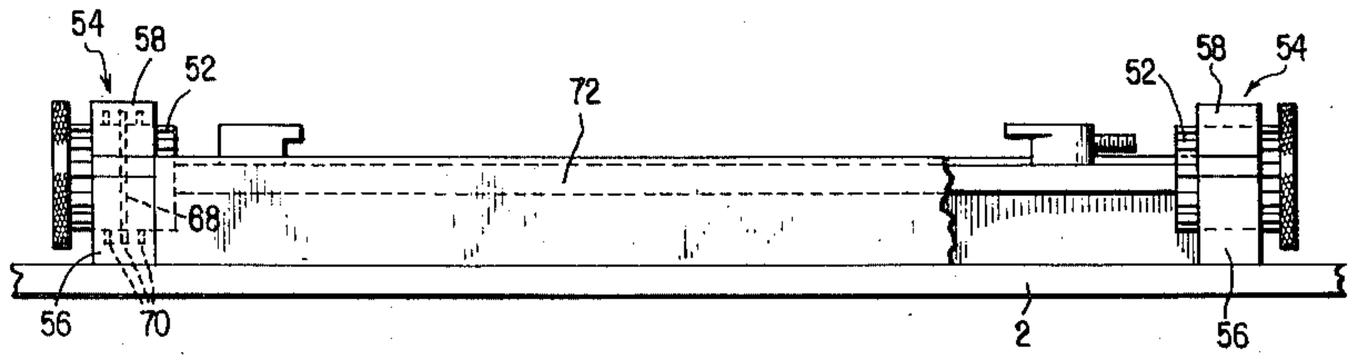


FIG. 4

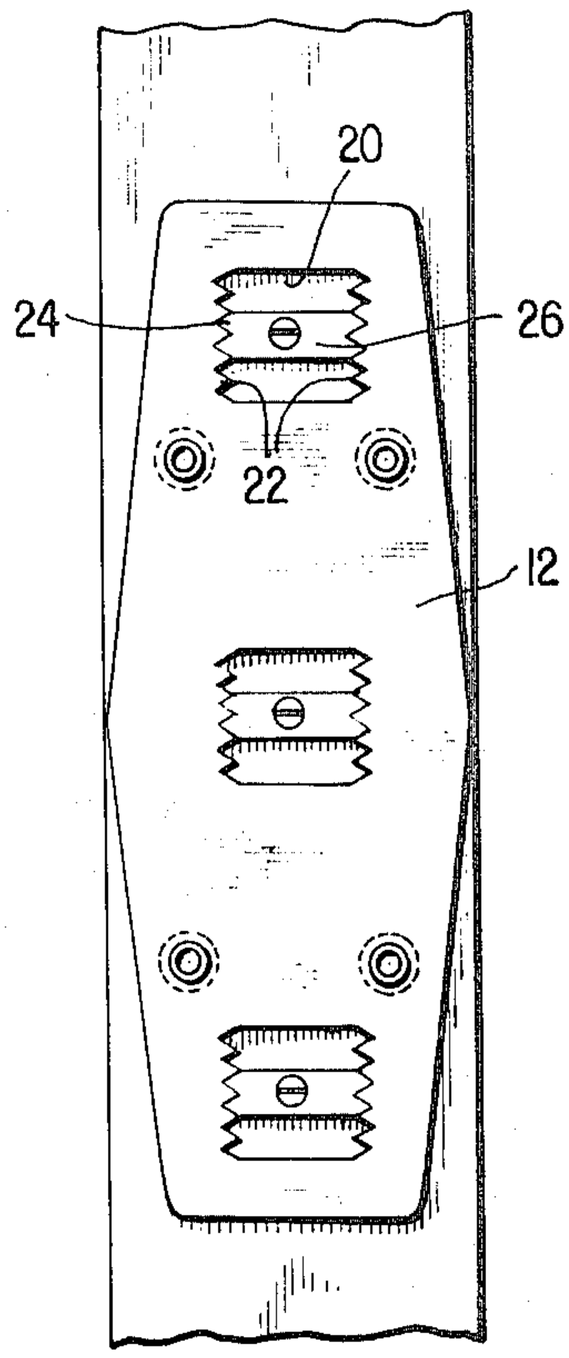


FIG. 1

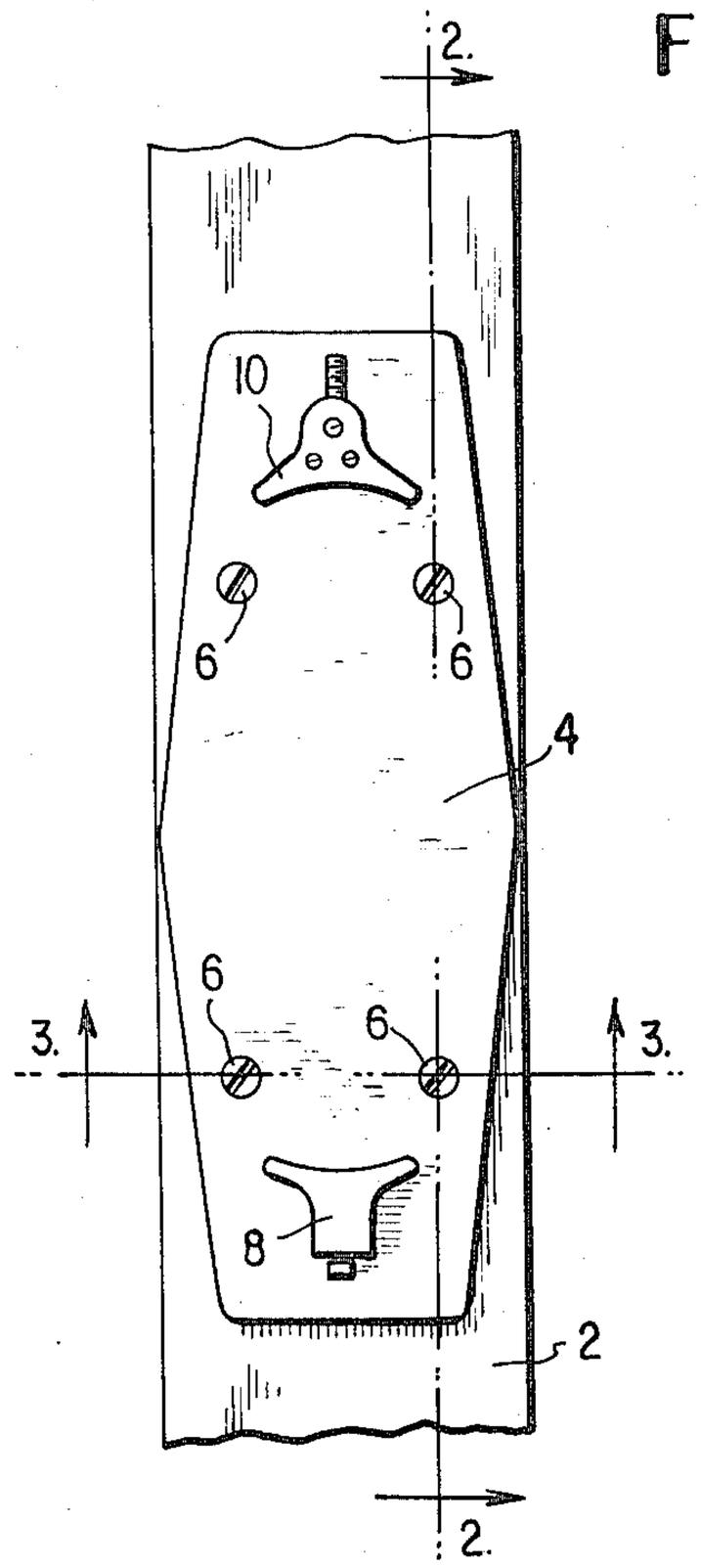


FIG. 2

FIG. 3

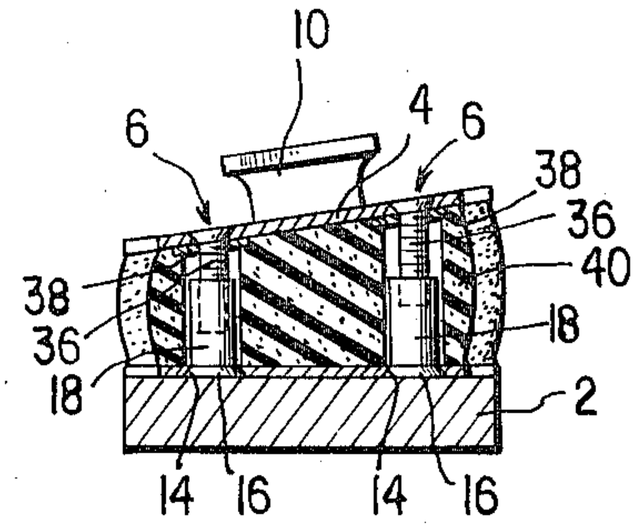
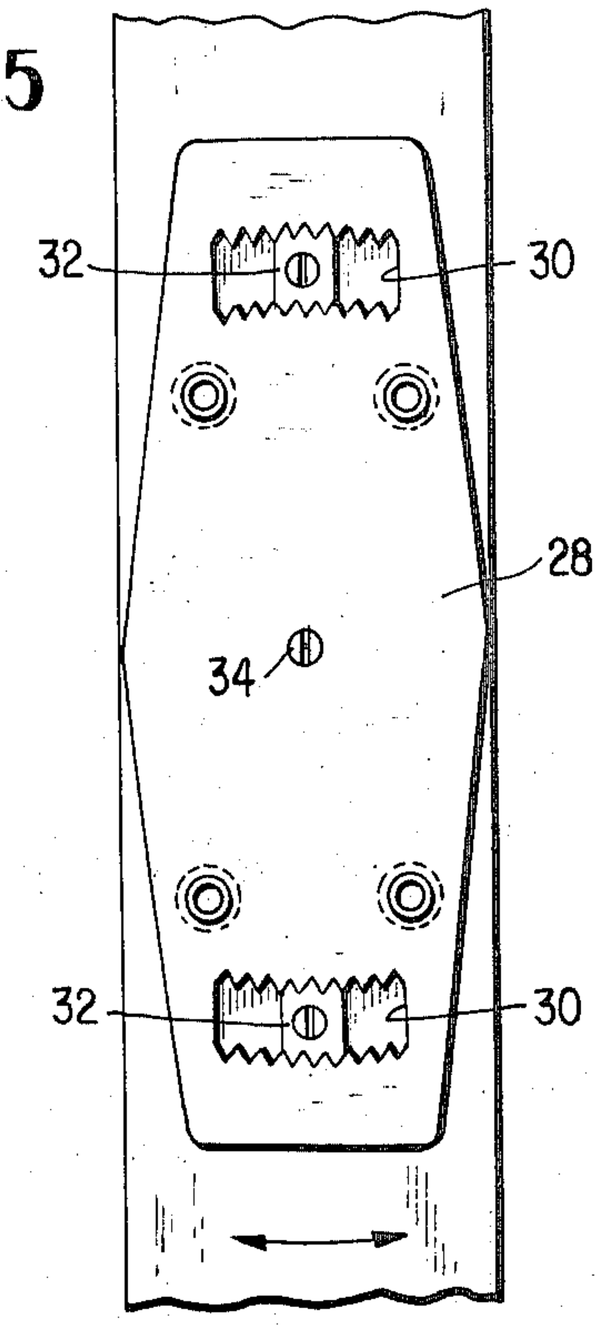


FIG. 5



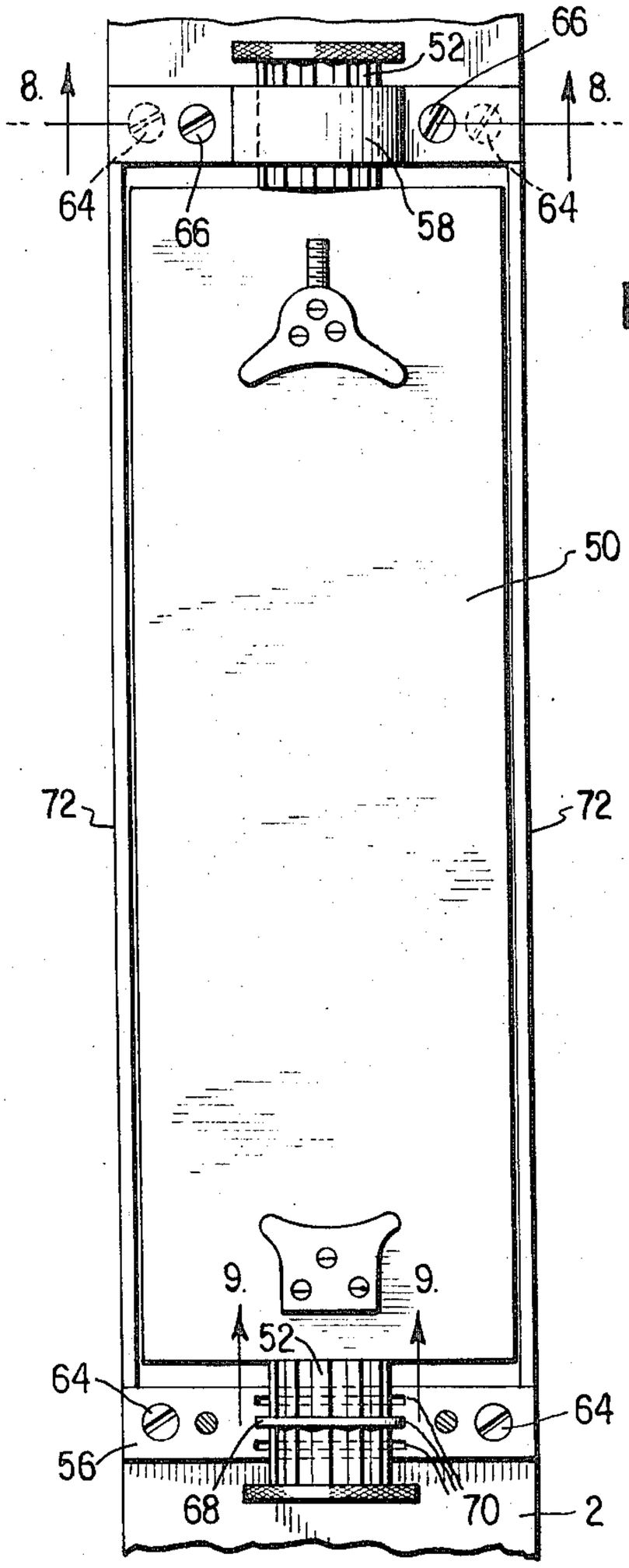
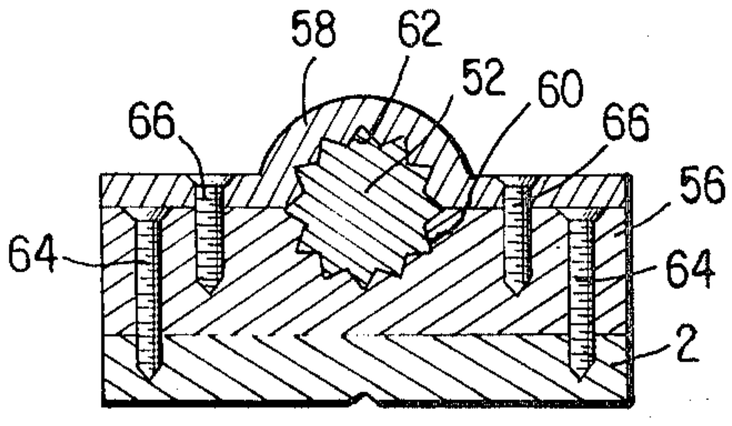


FIG. 6

FIG. 8



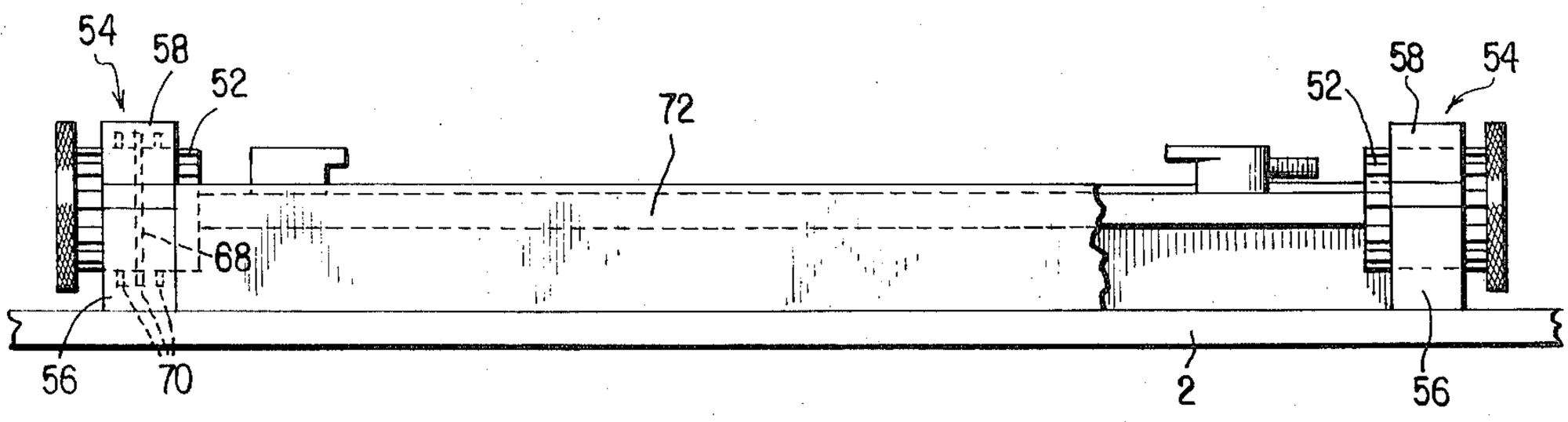


FIG. 7

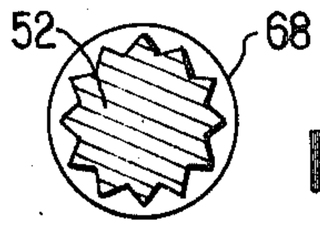


FIG. 9

ADJUSTABLE HARNESS FOR SKI BOOT

BACKGROUND OF THE INVENTION

It is sometimes desirable in the sport of snow skiing to cant the boot sideways relative to the ski for the purpose of compensating for personal irregularities in the skier's stance. An individual whose weight tends to be disproportionately supported by his feet often encounters great difficulty in maintaining his skis in a parallel relationship. In cases where the skier's weight may be supported slightly off-center, turning forces are generated which tend to produce a toe-in or toe-out condition of the skis. In order to achieve straight tracking the skier's ankles are subjected to added stress. In the past wedges have been inserted between the boot and the ski or between a boot-carrying plate and the ski to overcome this difficulty. Such expedients necessarily require that the skier have a number of wedges of different sizes if he desires to vary the angle of inclination of the boot with respect to the ski. A similar lack of adjustability obtains in those prior art devices which utilize wedges to produce a toe-up or toe-down orientation.

It is also desirable in certain circumstances, as in the case where the skier is knock-kneed or bow-legged, to be able to adjust the longitudinal axis of the boot relative to the longitudinal axis of the ski to produce a toe-in or toe-out condition of the boot relative to the ski.

In situations where turning ability is of paramount importance as in slalom racing, it is advantageous to be able to shift the position of the boot forwardly on the ski. Conversely, where greater speed is desired, the skier may wish to shift his boot position rearwardly.

SUMMARY OF THE INVENTION

It is a primary object of the present invention to provide a boot-receiving harness the inclination of which with respect to the ski surface may be readily and easily adjusted throughout a range of selected positions and which does not require auxiliary support means such as wedges or the like to achieve the desired result. The device comprises essentially a boot supporting plate upon which are mounted conventional toe and heel bindings and which is secured to the ski in the desired angular position in a manner that will be discussed in detail below. While the most important advantage afforded by the present invention is that the ski boot may be supported in a sideways tilted position, i.e., with the longitudinal axis of the boot remaining parallel to the longitudinal axis of the ski, the device also includes means by which the longitudinal axis of the boot may be tilted so as to intersect the plane of the ski and means by which the boot support may be moved forwardly or rearwardly or rotated about a vertical axis to provide a toe-in or toe-out position.

Various combinations of the above described adjustments may also be made. For instance, should the skier wish to have his boot canted towards the inside edge of the ski and also have the toe of his boot lower than the heel and should the skier be pigeon-toed and wish to compensate by toeing-in, all of these adjustments are possible in a preferred embodiment of the invention.

A further important feature of the present invention is the inclusion of a compressible material between the boot supporting member and the ski. This material prevents snow and ice from collecting between the boot and ski and the natural resilience of the material when it is compressed serves to tension and tighten the connection of the boot plate to the ski.

DESCRIPTION OF THE DRAWINGS

FIG. 1 is a top view of a central portion of a ski having the ski harness of the present invention mounted thereon;

FIG. 2 is a cross-sectional view as seen from line II—II of FIG. 1;

FIG. 3 is a cross-sectional view as seen from line III—III of FIG. 1;

FIG. 4 is a top view similar to FIG. 1 but having parts removed to expose the base plate;

FIG. 5 is a view similar to FIG. 4 of an alternative embodiment of the base plate of the present invention;

FIG. 6 is a top view of an alternative embodiment of the invention with the top portion of the rear pillow block removed to more clearly illustrate the invention;

FIG. 7 is a side view of the device of FIG. 6;

FIG. 8 is a cross-sectional view as seen from line VIII—VIII of FIG. 6;

FIG. 9 is a cross-sectional view as seen from line IX—IX of FIG. 6.

DESCRIPTION OF THE PREFERRED EMBODIMENTS

Referring to FIG. 1, there is shown a ski 2 upon which a boot-receiving plate 4 is adjustably mounted by means of screw-jacks 6. Boot plate 4 carries conventional heel and toe bindings, 8 and 10 respectively.

As shown in FIG. 2, a base plate 12 is secured to the ski 2 and includes cone-shaped openings 14 in which the flared bases 16 of the screw-jack socket members 18 are captively received. Base plate 12 may be fixedly secured to the ski by screws or the like, but an adjustable mounting such as shown in FIGS. 4 and 5 is preferred. In the embodiment of FIG. 4 the base plate 12 has a plurality of toothed locking grooves 20 in which the longitudinally aligned teeth 22 extend in opposed relationship towards the center line of the ski. The teeth have slanted surfaces (not shown) sloping downwardly toward the centerline. Complementary shaped teeth 24 on clamping lugs 26 which are screwed to the ski override the base plate teeth 22 and rigidly clamp the base plate to the ski. It is obvious that with the construction shown in FIG. 4 the base plate may be moved fore and aft at the discretion of the skier by loosening the screws securing the clamping lugs 26 to the ski, sliding the base plate in the desired direction, and reclamping lugs 26 with the base plate in its new position.

In the alternative embodiment shown in FIG. 5 the base plate 28 is formed with arcuate toothed locking grooves 30 at both ends which coact with complementary toothed clamping lugs 32 to permit selective positioning of the base plate by rotating about central screw 34. Thus a toe-in or toe-out condition may be obtained.

The aforementioned screw-jacks 6 as best seen in FIGS. 2 and 3 consist of an internally threaded socket member 18 clamped to the ski 2 by the base plate 12 as described above, a bolt 36 extending through the boot-receiving plate 4 and received within the socket member, and a lock washer 38 serving to maintain the boot plate 4 in the position of maximum elevation per-

mitted by the head of the bolt **36.** As shown in FIG. **3** the boot-receiving plate **4** may be canted sideways by threading the bolts of one side to a greater extent within their socket members. In a similar manner a toe-down or toe-up orientation may be achieved by differentially threading the fore and aft sets of bolts. A combination of these adjustments is also possible as is readily apparent.

A compressible material **40** such as rubber, foam rubber or the like is sandwiched between the boot plate and the base plate to prevent snow and ice from accumulating therein and assist in supporting the boot plate tightly upon the ski. Preferably this material is somewhat compressed even when the boat-receiving plate **4** is in its uppermost position in order to more firmly support the weight of the skier.

In the alternative embodiment of the invention shown in FIGS. **6** through **9** the boot plate **50** has a pair of longitudinally splined stub shafts **52** formed at either end which are received within complementary splined front and rear pillow blocks **54** each of which is defined by a lower support bracket **56** secured to the ski **2** and an upper locking clamp **58** secured to the support bracket **56.** As best seen in FIG. **8** the lower support bracket **56** has an upwardly opening generally semi-cylindrical longitudinally splined recess **60,** and the upper locking clamp has downwardly opening recess **62** of similar configuration. Screws **54** rigidly affix the lower support bracket to the ski **2,** and the upper locking clamp **58** is secured to the support bracket **56** by means of screws **66.** As is apparent, with this construction the boot plate may be securely clamped in a variety of angular positions relative to the ski by removing the upper locking clamp and rotating the boot plate about its central longitudinal axis.

Longitudinal stability as well as fore-and-aft adjustability are afforded by the provision of an outstanding annular locking ring **68** formed integrally with either or both stud members **52** in conjunction with a plurality of annular locking grooves **70** formed in socket members **54** as best seen in FIGS. **6** and **9.** The upper locking clamp **58** has been removed in FIG. **6** to more clearly display this feature.

Optional sidewalls **72** may extend between the front and rear support pieces **56** to exclude snow and ice, and/or a compressible filler may be sandwiched between the boot plate and the ski as in the embodiment of FIG. **2.**

It is apparent that modifications can be made to the above-described embodiments of the invention without departing from the spirit of the invention as defined in the appended claims.

I claim:

1. An adjustable harness for a ski boot comprising a boot receiving means; spaced pillow blocks adapted for securement to a ski; and means securing said boot-receiving means to said pillow blocks in spaced relation to a ski, said means securing said boot-receiving means to said pillow blocks including means for selectively adjusting the angular position of said boot-receiving means about a longitudinal axis extending through said boot-receiving means and said pillow blocks.

2. The device of claim **1** wherein said means securing said boot-receiving means to said pillow blocks comprises a pair of coaxial stub shafts extending forwardly and rearwardly from said boot-receiving means, said stub shafts having a plurality of longitudinal splines, and a pair of complementary splined sockets formed in said pillow blocks.

3. The device of claim **1** wherein said means securing said boot-receiving means to said pillow blocks includes means for locking said boot-receiving means in a selected longitudinal position on a ski.

4. In combination with a ski, an adjustable harness for a ski boot comprising a boot-receiving means; spaced pillow blocks secured to said ski; and means securing said boot-receiving means to said pillow blocks in spaced relation to said ski, said means securing said boot-receiving means to said pillow blocks including means for selectively adjusting the angular position of said boot-receiving means about a longitudinal axis extending through said boot-receiving means and said pillow blocks.

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