

May 3, 1949.

H. HVAM
SKI BINDING

2,468,879

Filed Jan. 29, 1948

2 Sheets-Sheet 1

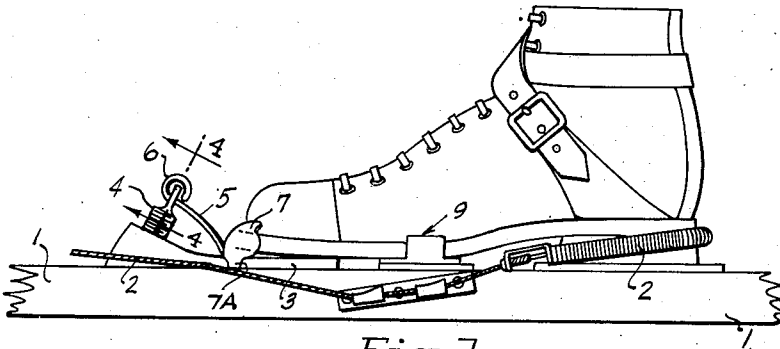


Fig. 1

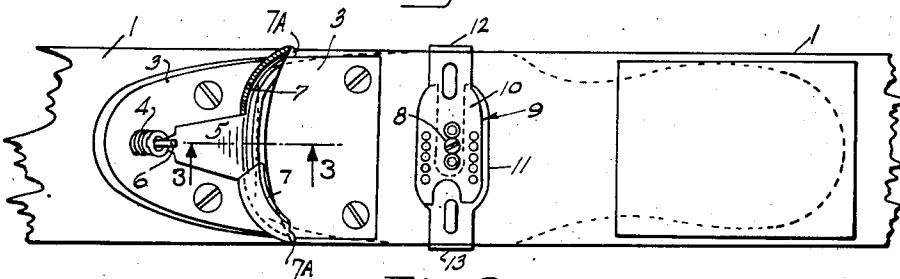


Fig. 2.

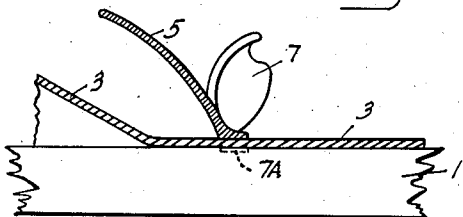


Fig. 3.



Fig. 4.

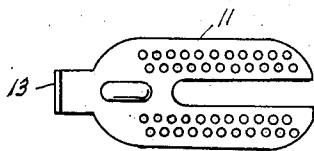


Fig. 5.

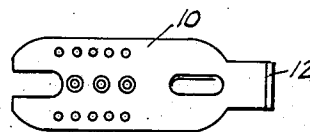


Fig. 6.

Inventor
Hjalmar Hvam
by *James D. Givnan*
Atty.

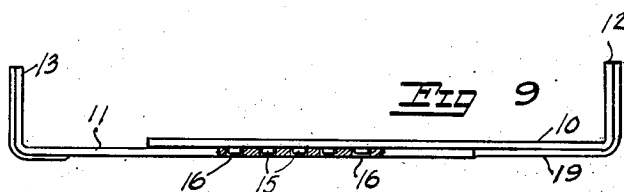
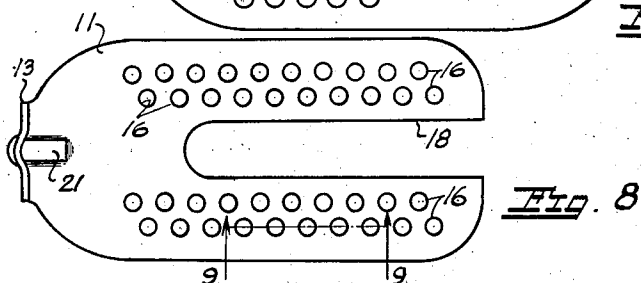
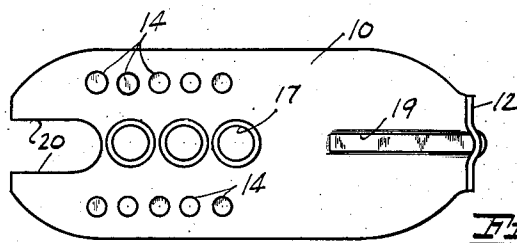
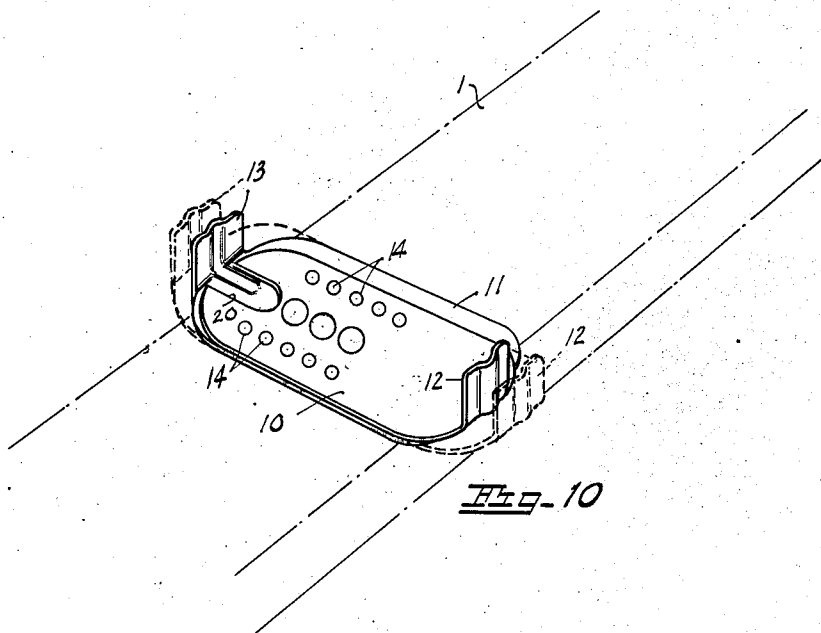
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2 Sheets-Sheet 2



HJALMAR HVAM
INVENTOR.

BY *James E. Givnan*
ATTY.

UNITED STATES PATENT OFFICE

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SKI BINDING

Hjalmar Hvam, Portland, Oreg.

Application January 29, 1948, Serial No. 5,139

4 Claims. (Cl. 280—11.35)

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This invention relates to improvements in ski bindings and more particularly to shoe positioning means for normally maintaining a skier's shoe in alignment with a ski and in proper contact with an abutment mounted to the ski and particularly an abutment in the form of a swivel or pivot.

It is one of the principal objects of the invention to provide shoe positioning means as aforesaid which is of minimum thickness and readily adjustable into fixed positions for contact with the shoe and for maintaining the shoe in normal alignment with the ski. The shoe positioning means is pivotally attached to the ski so that it will rotate in the direction of pivotal movement of a skier's foot when accidentally falling to the right or to the left with respect to the ski, and which will also offer no resistance to releasing the shoe from the ski in the event of a skier's falling forwardly or rearwardly.

A further object is the provision of shoe positioning means of this character which is made by simple blanking and forming operations out of relatively thin malleable "Cor-ten" steel which is well known for its strength and non-fracturing qualities when bent into predetermined shapes and also for its strain hardening qualities. In other words, the metal becomes hardened at all points where any strains occur while being bent into various shapes.

The invention includes two spaced apart vertical abutments for contact with the sides of a skier's shoe, and these contacts when in use are under loads tending to bend them away from their vertical positions. Moreover, the use of "Cor-ten" steel enables me to provide a shoe positioning means of much less thickness than that required when using ordinary cold rolled steel.

A still further object is the incorporation of means in a shoe positioning element for rendering it adjustable throughout a greater operative range than heretofore, and into a greater number of adjusted positions intermediate its extreme limits of adjustment.

These and other objects will appear as my invention is more fully hereinafter described in the following specification, illustrated in the accompanying drawings and finally pointed out in the appended claims.

In the drawings:

Figure 1 is a side elevation of a fragmentary length of ski provided with my invention as applied to the foot of a skier.

Figure 2 is a top plan view of Figure 1 with the shoe removed, but shown in dotted lines.

Figure 3 is an enlarged fragmentary sectional

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side elevation taken along the line 3—3 of Figure 2.

Figure 4 is an enlarged sectional detail view taken along the line 4—4 of Figure 1.

Figures 5 and 6 are top plan views of two co-operative elements that constitute the shoe positioning means.

Figures 7 and 8 are enlarged views similar to Figures 5 and 6.

Figure 9 is a side elevation of the elements shown in Figures 7 and 8 assembled and partly in section as viewed along the line 9—9 of Figure 8.

Figure 10 is a perspective view of the assembled shoe positioning means and showing in dotted lines its approximate range of adjustment.

Referring now more particularly to the drawings:

Reference numeral 1 indicates a ski provided with an elastic retainer 2 of any approved type and whose forward end is adjustably attached to the ski in the conventional manner. A toe plate 3 is secured to the ski and its forward end enlarged or inclined upwardly as shown and formed with an internally threaded aperture to receive a swivel piece consisting of a threaded eye bolt 4 to which is swingably attached one end of an oblique plate member 5 by means of a ring or looped end portion 6. The opposite end of the plate terminates in a toe-clip 7 of arcuate shape as shown and adapted to receive the toe of the shoe or the forward end of the sole thereof under the influence of the elastic retainer 2. The outermost ends of the toe clip are formed with downwardly extending projections 1A which overlie the side edges of the toe plate 3 and serve to position the toe clip to receive the forward end of the shoe. The projections offer no resistance to the releasable features as aforesaid.

The oblique member 5 and the toe-clip oppose forward displacement of the shoe. Rearwardly of the toe plate 3, at approximately the widest part of the sole of the shoe for holding the shoe against lateral displacement, I pivotally mount, by means of a flat-head screw 8, the shoe positioning means generally indicated at 9. The positioning means is made up of a top plate 10 and bottom plate 11, each formed at one of its ends with a vertical lug 12 and 13, respectively. These lugs do not clamp the sides of the shoe or the sole but are arranged vertically along both sides thereof so that the shoe will be free to move upwardly, forwardly, or rearwardly, when necessary. Along each side of the top plate 11, I form a plurality of indentations 14 to form projections 15 on the bottom side thereof for engagement with

a series of apertures 16 formed in the bottom plate. By the staggered arrangement of the apertures 16 in the direction of the length and width of the bottom plate I am able to obtain a greater number of adjustments than if only a single row of apertures were used. When assembled both plates are held together and pivotally mounted to the ski by means of the screw 8 which may extend through any one of the aligned and countersunk apertures 17 formed in the top plate. The bottom plate is bifurcated as at 18 to straddle the pivot screw 8 so as not to interfere with the adjusting of the plates. The bifurcation 18 also straddles a strengthening rib 19 formed in the top plate, and a bifurcation 20 in the top plate straddles a strengthening rib 21 formed in the bottom plate. Both plates, as previously pointed out, are made of relatively thin malleable "Corten" steel which is well known for its strength, non-fracturing and strain hardening qualities which are particularly desirable in a shoe positioning element of this character wherein the ends are bent upwardly as above pointed out and strengthening ribs and other reinforcements are formed by bending operations.

To provide for the various magnitudes of the forces required to dislodge the toe-clip 7 and the shoe, suitable for skiers of different strengths and weights, the eye-bolt 4 is conveniently threaded in the toe-plate and is held against rotation by the engagement of the oblique member 5, the toe-clip and the shoe, which are stabilized and held in place on the ski, as previously pointed out, by the elastic retainer 2 and the shoe-positioning element 9.

It will be apparent that vertical adjustment of the eye-bolt 4 will result in variations of that vertical component holding the skier's toe to the ski with a given tension in the elastic retainer. Thus the shoe may be secured to the ski with any desired practical security.

In skiing mishaps involving torsional stresses of the skier's leg, the shoe will be urged in rotation about the pivot point or screw 8 of the shoe-positioning means against the resistance of the elastic retainer 2. Rotation in either direction will, of course, swing the oblique member 5 and toe clip out of engagement with the shoe, allowing the shoe to freely pull away from the ski and relieve the leg of the skier of the torsional stresses aforesaid. In a rearward fall the heel of the shoe becomes the pivot point about which it swings against the tension of the elastic retainer as the toe of the shoe lifts the toe clip and oblique member upwardly to thus break the connection with the shoe, it being remembered that the shoe-positioning element 9 does not clamp the sole of the shoe but is arranged vertically along both sides thereof so that the shoe will be free to slide upwardly, forwardly or rearwardly when necessary as aforesaid.

In falling to either side, the toe clip and the oblique member by means of its looped and universal connection with the eye-bolt 4 (see Figure 4), may be swung to the right or left as shown in dotted lines.

While I have shown a particular form of embodiment of my invention, I am aware that many minor changes therein will readily suggest themselves to others skilled in the art, without depart-

ing from the spirit and scope of the invention. Having thus described the invention, what I claim as new and desire to protect by Letters Patent is:

1. A ski binding comprising a swivel piece adapted for attachment to a ski, pivotally mounted shoe-positioning means disposed rearwardly of the swivel piece, an oblique plate swingably attached at its forward end to said swivel piece and formed at its opposite end with means for releasably engaging the toe of a skier's shoe, elastic retainer means for normally maintaining said shoe in contact with said toe engaging means, said shoe positioning means comprising two plates superimposed one upon the other, means formed in one of said plates to be received by means formed in the other plate for adjusting the plates longitudinally with respect to each other.

2. A ski binding comprising a swivel piece adapted for attachment to a ski, pivotally mounted shoe-positioning means disposed rearwardly of the swivel piece, an oblique plate swingably attached at its forward end to said swivel piece and formed at its opposite end with means for releasably engaging the toe of a skier's shoe, elastic retainer means for normally maintaining said shoe in contact with said toe engaging means, said shoe positioning means consisting of a pair of transverse plates superimposed one upon the other and each turned upwardly at one of its ends to form shoe contacting flanges, cooperative means formed in each of said plates for joining the same together in longitudinal and transverse adjustment with respect to each other, and means for securing said plates together in adjusted relation to each other and for pivotally attaching both of said plates as a unit to the ski.

3. Shoe positioning means for positioning a skier's shoe on a ski, consisting of two plates superimposed one upon the other, means formed in one of said plates to be received by means formed in the other plate for adjusting the plates longitudinally with respect to each other, and means for securing said plates in engagement with each other and both of said plates in pivotal attachment to the ski.

4. In a ski binding having a pivotal abutment mounted upon the ski for contact with the forward end of a skier's shoe, the combination of shoe positioning means disposed rearwardly of said abutment for normally maintaining the shoe in alignment with the ski, said shoe positioning means consisting of a pair of transverse plates superimposed one upon the other and each turned upwardly at one of its ends to form shoe contacting flanges, cooperative means formed in each of said plates for joining the same together in longitudinal adjustment with respect to each other, and means for securing said plates together in adjusted relation to each other and for pivotally attaching both of said plates as a unit to the ski.

HJALMAR HVAM.

REFERENCES CITED

The following references are of record in the file of this patent:

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