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J. K. SILBERMAN

3,198,537

SKI BINDING PLATE

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Fig. 1.

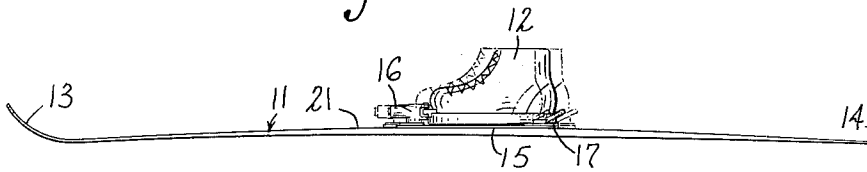


Fig. 2.

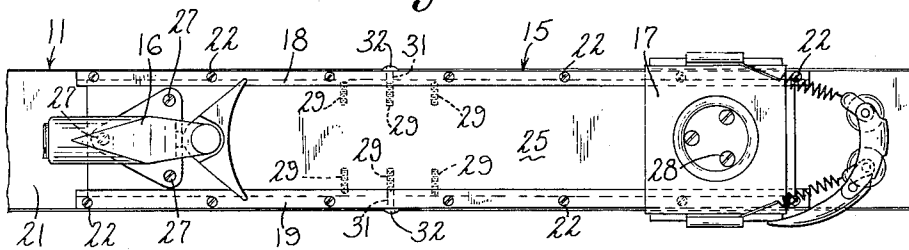


Fig. 3.

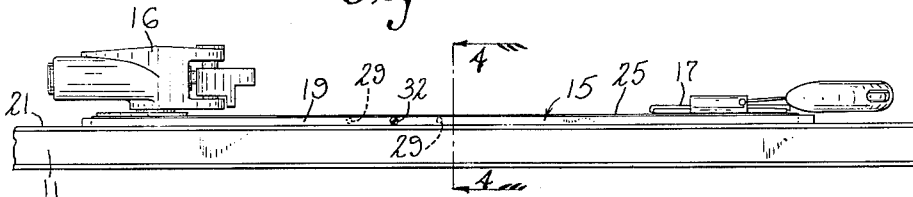


Fig. 4.

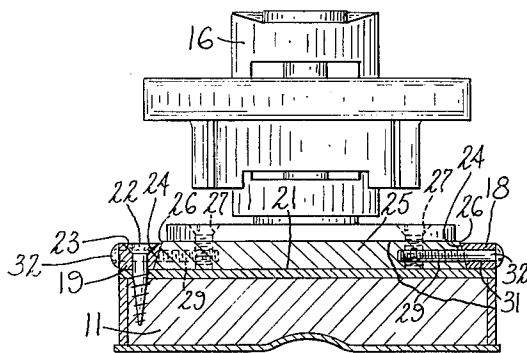
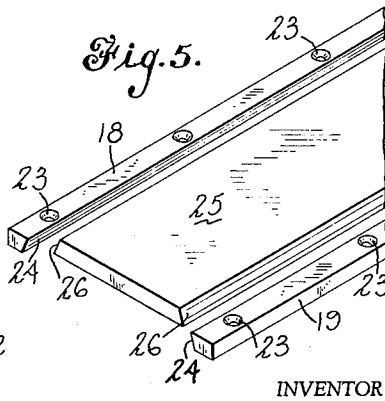


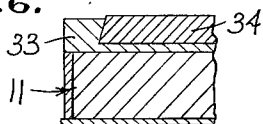
Fig. 5.



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Fig. 6.



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3,198,537

SKI BINDING PLATE

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5 Claims. (Cl. 280—11.35)

This invention relates generally to a device for use in skiing and is more specifically directed to a device used in conjunction with a ski and a ski binding.

As is well known in the art, skis are generally sold without bindings and a vast selection of bindings are available which can be mounted to the ski. In recent years the release or safety binding has become almost universally used, this binding permitting the skier's boot to free itself from the ski during a severe fall to prevent injury to the skier. The number of safety bindings on the market increases every year but the mechanisms generally fall into two categories. One mechanism or device is usually known as a toe-release, while the other device is known as a heel-release. Sometimes the heel-release includes a cable locked by a cam-actuated lever and in other devices the heel-release acts as a turntable used in conjunction with a long thong to permit the boot to travel through an arcuate path during a twisting fall. Most recently, the heel-release has become a self-contained unit mounted behind the heel of the boot.

While the function of both the toe-release and the heel-release are to release the boot to reduce or prevent injury, the primary, initial function of a binding is to secure the boot to the ski, thereby making the boot an integral part of the ski.

The location of the boot on the ski is a direct function of the position of the binding on the ski. Since the bindings are usually mounted by the ski or sport shop selling the skis and bindings, binding location will quite often vary from person to person, depending upon the particular theory to which the mounter subscribes. Furthermore, geographical area location also has a great effect on binding placement because of the principles which will now be discussed.

In considering boot or binding placement, a relationship is developed between the position of the ball of the foot of the skier and the longitudinal balance point of the ski. Since a skier is constantly shifting his weight during skiing, the ease with which this may be done is greatly affected by the position of the skier with relation to the balance point. However, other factors need also be considered. One very important factor is the snow conditions under which the skier normally skis and the type of skiing he intends to do with any particular pair of skis. If the skier does a great deal of skiing in an area known for its abundance of deep snow, the skier will preferably have his bindings mounted so that his weight is slightly further to the rear of the ski, thus permitting the tips of the ski to more easily ride out of the deep snow or "float" in the powder. Also, the downhill racer will prefer to have his weight positioned toward the rear to place more weight on the heel of the ski than on the tip. Experience has proven that, while some control is sacrificed, greater speed may be attained.

On the other hand, if the skier skis in an area known for its paucity of deep powder and its abundance of hard-packed snow and ice, the skier will prefer to have his weight positioned more toward the tip of the ski to place more weight on the forward edges of the ski. By so doing, greater edge control may be had and better "bite" of the ski into the surface of the snow will be attained. Also, the skier skiing in a slalom race, will prefer to have more weight toward the tip since this will also give him greater "bite" for surer footing and better control.

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With less weight on the heel of the ski, the skier will be more easily able to unweight the heels of the ski for executing quick turns. From this, it can be seen that ideally a skier should have a number of different skis, each designed for different types of snow conditions and contests, each also having the binding placement determined by the snow conditions under which the skis are to be used. While the racer may, and usually does, equip himself with several pairs of skis, the recreational skier will usually own only a single pair of skis and, therefore, his ski shop normally mounts the bindings so that his weight is positioned with relation to the balance point of the ski at a position which is a compromise between the optimum positions for any particular situation. In the compromise position, sometimes known as the "combination" position, as opposed to the "slalom" position or "downhill" position, the skier neither gets the balance and control he wants on a hard-packed surface nor the lift and floating action he wants in deep snow.

Accordingly, it is an object of this invention to provide a device which can be utilized in conjunction with a ski and ski binding to permit selection of the position of the binding with regard to the particular skiing conditions at any time.

Another object of the invention is to provide means for adjusting a ski binding longitudinally of the ski without affecting the settings of the bindings.

A further object of the invention is to provide simplified means for shifting the position of the weight of the skier relative to the ski.

Still other objects and advantages of the invention will in part be obvious and will in part be apparent from the specification.

Generally speaking, in accordance with this invention, a slidable plate having several adjusted positions is cooperatively attached to the ski. The binding for securing the skier's boot, is mounted to the plate and the skier can thereafter adjust the position of the entire plate and the binding mounted thereon relative to the ski to suit varying snow conditions.

The invention accordingly comprises the features of construction, combination of elements, and arrangement of parts which will be exemplified in the constructions hereinafter set forth, and the scope of the invention will be indicated in the claims:

For fuller understanding of the invention, reference is had to the following description taken in connection with the accompanying drawing, in which:

FIG. 1 is a side elevational view of a boot and binding mounted to a ski in accordance with the invention;

FIG. 2 is a top plan view of a binding plate constructed in accordance with the invention;

FIG. 3 is a side elevational view of the device of FIG. 2;

FIG. 4 is a sectional view taken along line 4—4 of FIG. 3;

FIG. 5 is a perspective view of a ski binding plate constructed in accordance with a preferred embodiment of the invention; and

FIG. 6 is a partial sectional view of an alternate embodiment of the invention.

Referring now to FIG. 1, a ski 11 is shown with a boot 12 mounted thereon. The longitudinal axis of the ski extends from the tip 13 to the heel 14 with the boot being mounted generally over the balance point of the ski. In this preferred embodiment of the invention, a ski binding plate indicated generally at 15 is mounted to the ski with the binding being secured thereto. The binding consists principally of a toe-release 16 and a heel plate 17. The toe-release and heel plate cooperate to clamp boot 12 to the plate 15.

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Referring now to FIGS. 2 through 5, the binding plate 15 is shown in greater detail. A pair of guides 18 and 19 extend along the entire length of the binding and are secured to the upper surface 21 of ski 11 adjacent the outside edges thereof by means of a plurality of screws 22 extending through countersunk holes 23 in the guides. Screws 22 are preferably of the flathead type so as to be flush with the uppermost surface of the guides. The facing or interior sides 24 of guides 18 and 19 slope inwardly or toward the longitudinal edges of the ski as best shown in FIGS. 4 and 5. An elongated plate 25 overlies upper surface 21 of the ski between guides 18 and 19. The outer sides 26 of plate 25 slope outwardly at the same angle as sides 24 of the guides for mating engagement therebetween. In effect, elongated plate 25 is dovetailed between guides 18 and 19. It is thus seen that elongated plate 25, being mounted on the upper surface of the ski, may slide toward the tip and heel of the ski along the longitudinal axis of the ski. The dovetail arrangement between elongated plate 25 and guides 18 and 19 prevents lifting of plate 25 from the ski.

The binding elements are secured to elongated plate 25. A toe-release 16 typical of one presently available on the market, is shown secured to the upper surface of elongated plate 25 through screws 27. These screws preferably engage threaded holes in the elongated plate and are wholly within the plate. Contact with the upper surface of the ski would impede sliding movement of the elongated plate. Heel plate 17, which is also representative of a heel plate presently available on the market, is likewise secured to elongated plate 25 through screws 28. As shown, heel plate 17 has a clamping element adapted to extend around the groove in the heel of the ski boot to urge the toe of the boot into contact with toe-release 16, thereby rigidly but releasably clamping the boot into the binding. To minimize the possibility of interference of the binding and the boot with guides 18 and 19, elongated plate 25 may be slightly thicker than the guides so as to provide clearance between the upper surface of the guides and the binding and boot. This may best be seen in FIG. 4. Since the elements 16 and 17 which comprise the binding form no part of the invention and since any binding which the skier selects may be mounted to the elongated plate, no detailed description of elements 16 and 17 is deemed necessary. It is sufficient to note that the position of binding elements 16 and 17 with relation to one another is determined by the size of boot 12 as is usually the case when mounting the binding elements directly to the ski.

A plurality of threaded holes 29 extend into elongated plate 25 from opposite sides thereof at spaced intervals. As shown in FIG. 2, three holes 29 extend into the elongated plate along each of the outer sides or edges and the spacing between adjacent holes determines the amount of adjustment provided for the binding relative to the ski. A clearance hole 31 extends through each of guides 18 and 19 opposite threaded holes 29. A screw 32 is provided for each of the clearance holes 31 and is adapted to threadedly engage one of the holes 29 on each side of the elongated plate. The screws 32 secure the elongated plate in any of the selected positions relative to guides 18 and 19. The FIG. 2 position shows the elongated plate adjusted to the center or "combination" position which may be used as an average position. If the skier wishes to position his weight more toward the rear, screws 32 are removed and the elongated plate with the binding elements thereon is slid toward the rear until the next threaded holes 29 align with the clearance holes 31. The screws are then again secured to prevent relative movement of the binding and the ski. Conversely, shifting of the skier's weight toward the tip may be accomplished by removing screws 32 and adjusting the elongated plate to a forward position, whereafter the screws are secured. The forward and rearward adjusted

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positions of the boot and binding relative to the ski are shown in phantom in FIG. 1.

It is emphasized that adjustment of the elongated plate to shift the position of the skier relative to the balance point of the ski in no way affects the adjustment of the bindings. Thus, quick adjustment without special tools and without requiring a knowledge of binding adjustment and tensioning, may be readily accomplished by the skier and changes may be quickly made throughout the day as snow conditions may change. As stated above, the center threaded holes 29 represent the "combination" position, while the outer holes represent the "slalom" and "downhill" positions. While there is no limitation on the amount of longitudinal adjustment which may be provided, a total adjustment of approximately 5 cm. or 2 inches, is considered adequate. Care must be taken that the skier's weight cannot be placed either too far toward the tip or too far toward the heel. However, if finer adjustments are desired or greater range of adjustment is deemed desirable, it is only necessary to add threaded holes in the elongated plate.

Only two screws 32 are shown for securing the elongated plate in position. These screws need only overcome the shearing force directed along the longitudinal axis. Side-thrust and vertical lift are more than adequately provided for by the dovetail cooperation between the elongated plate and the guides. However, if additional screws 32 are desired, these may be readily provided for. Also, while each side of the binding plate is provided with a plurality of holes in the elongated plate and a single hole through the guide, this could be reversed if desired. However, it is desirable to eliminate open holes in the guide since these are likely to fill up with snow and ice, thereby making ready adjustment difficult. In the preferred embodiment, the holes 29 which are not being utilized on any particular adjustment, are completely protected from the collection of snow and ice by engagement of the outer sides 26 with sloping sides 24.

It should also be noted that the preferred embodiment shows the guides as being longer than the elongated plate. This assures optimum security to prevent the elongated plate from extending excessively beyond the guides in the forwardmost or rearwardmost position of adjustment.

As mentioned previously, some heel-clamping devices utilize a cam-lever and cable arrangement with the cam-lever being located ahead of the boot toward the tip of the ski. With such a binding, it is desirable to have the elongated plate and guide extend sufficiently so that the cam-lever may be mounted directly thereon. Otherwise, readjustment of the cable tension would be necessary upon shifting of the position of the binding. As an alternative, a separate set of plates and guides can be provided having adjusted positions corresponding to the adjusted positions of the main guides and plate assembly.

The embodiment depicted in FIGS. 1 through 5 is merely considered to be a preferred embodiment of the invention since there are clearly a plurality of equivalent constructions capable of carrying out the main features of the invention. The composite constructions of skis in use today readily lend themselves to construction of the ski with the longitudinally movable elongated plate as an integral part of the ski. Such an embodiment is shown in FIG. 6. Each edge of ski 11 is provided with guide portions 33 incorporated in the ski. A slidable plate 34 would be carried by the ski between the guide portions and the binding would be mounted to the plate. Suitable means would be provided to secure the plate in any longitudinally adjusted position.

It will thus be seen that the objects set forth above, among those made apparent from the preceding description, are efficiently attained and, since certain changes may be made in the above constructions without departing from the spirit and scope of the invention, it is intended that all matter contained in the above description

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or shown in the accompanying drawing shall be interpreted as illustrative and not in a limiting sense.

It is also to be understood that the following claims are intended to cover all of the generic and specific features of the invention herein described, and all statements of the scope of the invention which, as a matter of language, might be said to fall therebetween.

What is claimed is:

1. In combination, a ski having an upper surface and outer longitudinal edges, a pair of guides secured to the upper surface of said ski along the opposite edges thereof, the facing sides of said guides being inclined away from each other toward the surface of said ski to form a dovetail slide therebetween, a plate overlying the upper surface of said ski between said guides and having edges mating with the dovetail slide defined by said guides, ski boot toe and heel clamping means securely mounted on said plate, three longitudinally-spaced, transversely-extending, threaded holes extending into said plate from each side thereof, a transversely-extending clearance hole in each of said guides, and a screw for each of said clearance holes adapted to be engaged in one of the proximate threaded holes through said clearance holes for securing said plate in an adjusted longitudinal position relative to said guides whereby the location of the ski boot along the longitudinal axis of the ski may be adjusted without altering the adjustment of the toe and heel clamping means.

2. In combination, a ski having an upper surface and outer longitudinal edges, a pair of longitudinally extending guides secured to the upper surface of said ski along opposite longitudinal edges, a plate overlying the upper surface of said ski between said guides, said plate adapted to slide longitudinally of said ski, ski boot toe and heel clamping means securely mounted on said plate, and means acting between said guides and said plate for securing said plate to any selected position relative to said ski, said means for securing said plate relative to said guides comprising at least two longitudinally-spaced, transversely-extending, threaded holes in said plate, a transversely-extending clearance hole through one of said guides and

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a screw threadedly engaging one of the threaded holes in said plate through said clearance hole in said guide, whereby the location of the ski boot along the longitudinal axis of the ski may be adjusted without altering the adjustment of the toe and heel clamping means.

3. The structure defined in claim 2 wherein said guides are longer than said plate by an amount equal to the total distance between adjacent longitudinally extending threaded holes in one side of said plate.

4. In combination, a ski having an upper surface and outer longitudinal edges, a pair of guides secured to the upper surface of said ski along the opposite edges thereof, a plate overlying the upper surface of said ski between said guides and having edge portions thereof mating with said guides for permitting relative movement between said plate and said guides only in a direction parallel to the longitudinal axis of said ski, ski boot toe and heel clamping means securely mounted on said plate, and means extending transversely of the longitudinal axis of said ski through at least one of said guides and into said plate for securing said plate relative to said guides at a selected one of at least two longitudinally adjusted positions of said plate relative to said ski, whereby the location of the ski boot along the longitudinal axis of the ski may be adjusted without altering the adjustment of the toe and heel clamping means.

5. The structure defined in claim 4 wherein said longitudinal guides are longer than said plate.

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