Nov. 9, 1965 R. J. IVERSON ETAL 3,216,737

SKI BINDING RELEASE

Filed May 27, 1963 2 Sheets-Sheet 1

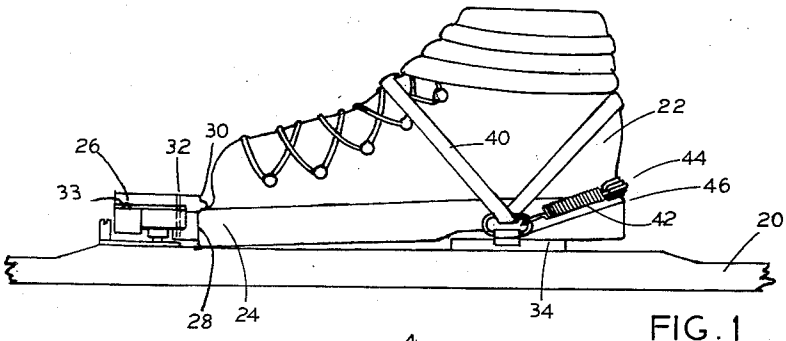


FIG. 1

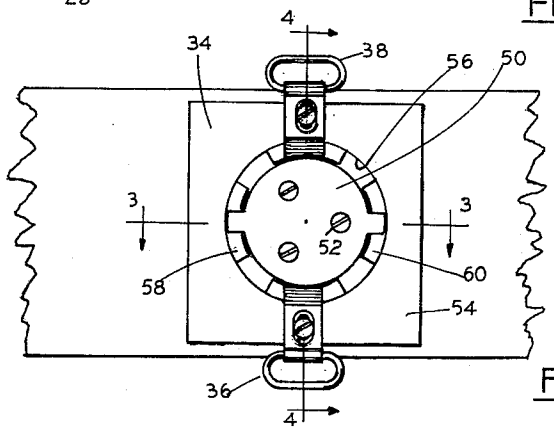


FIG. 2

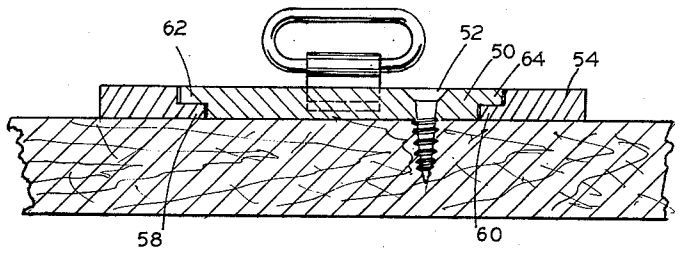


FIG. 3

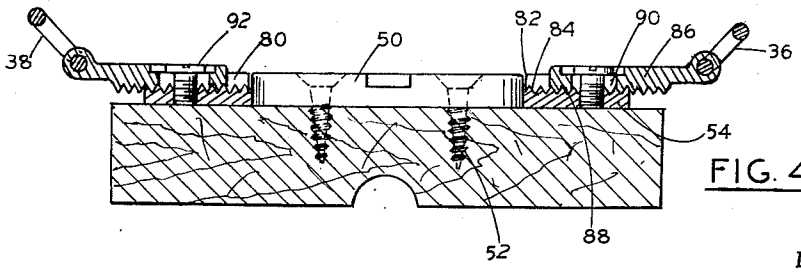


FIG. 4

INVENTOR.
RONALD J. IVERSON
ARTHUR T. SAFFORD

BY

ATTORNEY

Nov. 9, 1965 R. J. IVERSON ETAL 3,216,737

SKI BINDING RELEASE

Filed May 27, 1963 2 Sheets-Sheet 2

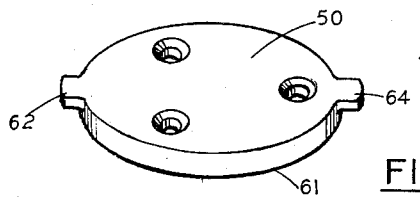


FIG. 5

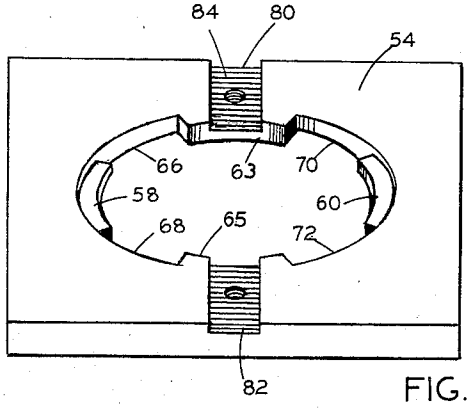


FIG. 6

INVENTOR.
RONALD J. IVERSON
ARTHUR T. SAFFORD

BY B. F. Kaufman

ATTORNEY

United States Patent Office

3,216,737
Patented Nov. 9, 1965

3,216,737

SKI BINDING RELEASE

Ronald J. Iverson, 687 South St., East Aurora, N.Y., and Arthur T. Safford, 136 Logan Road, New Canaan, Conn.

Filed May 27, 1963, Ser. No. 283,380
4 Claims. (Cl. 280—11.35)

This invention relates to safety releases for ski bindings and more particularly to a heel attachment that is disengageable from the ski on toe release and resultant disalignment of the ski boot with reference to the ski.

Various devices have been proposed to release the toe of a ski boot from rigid alignment with the ski, upon any substantial lateral force being applied, such as would occur in a spill or fall. It has become the practice, however, to secure the heel portion of the boot by a long thong binding, which does not release the boot heel from the ski other than to allow the boot some latitude of movement relative to the ski, so that injury may be lessened. However to avoid even the chance of injury, it is desirable that the boot be completely released from the ski, and that operation of the release be certain under the conditions which might otherwise result in injury.

The present invention is directed to a heel attachment for skiers, adapted for complete disengagement from the ski at any time the skier's boot becomes substantially disaligned from the longitudinal axis of the ski. The invention is directed to a heel attachment that is adapted to cooperate with a boot toe release such that when boot toe release takes place, any further turning movement of the boot relative to the ski results in complete release. The invention has to do with a releasable attachment that is insensitive to flexing of the ski, and which effectuates immediate and complete release, when the disalignment between boot and ski approaches 45 degrees. The attachment is such that under normal use the boot and ski are firmly held, so as in no way to detract from the necessarily tight binding essential to good skiing practice.

The above and other novel features of the invention will appear more fully hereinafter from the following detailed description when taken in conjunction with the accompanying drawings. It is expressly understood that the drawings are employed for purposes of illustration only and are not designed as a definition of the limits of the invention, reference being had for this purpose to the appended claims.

In the drawings wherein like reference characters indicate like parts:

FIGURE 1 is a side elevational view of the ski and boot attachment;

FIGURE 2 is a plan view of the detachable heel plate assemblage;

FIGURE 3 is a longitudinal section taken on the line 3—3 of FIGURE 2;

FIGURE 4 is a transverse section taken on the line 4—4 of FIGURE 2;

FIGURE 5 is a perspective view of the attachment plate; and

FIGURE 6 is a perspective view of the heel plate.

Referring to FIGURE 1 of the drawings there is shown the mid-portion of a ski **20**, with a ski boot **22** affixed thereto, the boot toe **24** being held by a swivel detent toe release **26**, which may be of the type shown in Marker 2,836,428 or any other type providing for toe release on substantial lateral pressure. For the purpose herein, the toe release may comprise an arcuate concave toothed toe gripping face **28**, with a retaining flange **30** overlying the sole of the boot at its toe. The release is pivotally mounted on an axis **32**, and held against pivotal motion about the axis **32**, in either direction, by a suitable releasable detent **33** so that any severe lateral twisting force

between boot and ski will effect the swinging of the toe gripping face to one side or the other to release the toe of the boot.

Underneath the ankle region or heel of the boot is a heel plate assembly **34** comprising a disk **50**, and heel plate **54**, the latter having rings **36** and **38** on either side through which a long thong binding **40** may be applied. A heel tightener in the form of heavy coil springs **42** which may be adjustable in length, and which may be joined by tightening lever linkage **44** preferably interfits with a groove **46** in the boot heel. The tightener applies forward thrust to secure the boot toe securely within the toe release.

The heel plate assemblage comprises the circular disk **50** which may be rigidly affixed to the ski bed as by screws **52** or other suitable means.

Disposed about the disk **50** is the swivel heel plate **54** having a central aperture **56** surrounding the disk **50**. The plate **54** has inwardly projecting segments **58** and **60** adapted to underly fore and aft extending tongues **62** and **64** on the disk **50**. The plate also has lateral inwardly extending segments or cheeks **63** and **65** adapted to embrace the cylindrical side wall **61** of the disk **50**.

The segments **58** and **60**, as well as the segments **63** and **65** are adapted to closely embrace the peripheral side wall **61** of the disk **50** so as to avoid lost motion. Between the segment **58** and segments **63** and **65**, and segment **60** and segments **63** and **65**, are spaces **66** and **68**, and **70** and **72** respectively, such that upon rotation of the plate **54** relative to the ski **20** and the disk **50**, through an angle approaching 45 degrees in either direction, the segments **58** and **60** are released from the tongues **62** and **64**, and plate **54** is at once detachable from the disk **50** and the ski.

The plate **54** may be provided with shallow lateral grooves **80** and **82** having transverse saw teeth **84** in which are held ring eye plates **86**, the same having teeth **88** on their under faces mating with the teeth **84**. The eye plates have longitudinal slots **90**, and are held to the plate **54** by flat head fillister screws **92**. The spacing between rings **36** and **38** may thus be adjustable to accommodate varying widths of heels, so that a snug and secure binding may be effected. In practice, of course, such adjustment may not be essential, and the eye plates and heel plate may be integral.

From the foregoing it will be seen that, on a spill, or accident such as may create a twisting force between boot and ski sufficient to operate the toe release, the further turning of the boot with reference to the ski will rotate the plate **54** in reference to the disk **50** to effect release, thereby protecting the skier from any severe twisting such as would likely cause severe injury.

It will be seen that the relatively small overall size of the disk **50** and its tongues **62** and **64**, is such as to render the release effective, irrespective of any flexing of the ski which may occur, since flexure of the mid-portion of the ski over the length occupied by the disk is practically indiscernible. At the same time the plate **54**, and disk **50** may be relatively thin, so that there is no necessity for recessing the heel assemblage in the surface of the ski.

Additionally the overall diameter of the disk, and the surrounding recesses **66**, **68**, **70** and **72** are protected by the overlying boot heel, so as to preclude snow or ice from lodging in the recesses, so that the release cannot become fouled. The release assemblage is such as can be applied to a ski without necessity of recessing the ski or otherwise damaging the ski in any essential respect, it being apparent that, if any clearance for the device is required, the thickness of the boot heel can be reduced for the purpose. The release is such as to lend itself to employment of long thong bindings as referred to, since the release of the plate provides the necessary release

protection. Such binding may be of the stretch type, the thong comprising a rectangular or flat section ribbon of rubber with a knit nylon covering.

While a single modification of the invention has been illustrated and described, it is to be understood that the invention is not limited thereto. As various changes in the construction and arrangement may be made without departing from the spirit of the invention, as will be apparent to those skilled in the art, reference will be had to the appended claims for a definition of the limits of the invention.

What is claimed is:

1. A ski binding comprising in combination with a ski having a toe clamp adapted to release the toe of a ski boot on the exertion of a predetermined lateral force in either direction, a heel plate assembly disposed upon the ski in the heel region thereof, said assembly comprising a circular disk having fore and aft tongues projecting therefrom spaced from the surface of the ski, and a heel plate of a thickness corresponding to said disk, and having an aperture therein adapted to surround said disk, said heel plate having arcuate segmental projections extending inwardly from the sides thereof adapted to engage the cylindrical side walls of said circular disk, and arcuate segmental projections extending inwardly from the front and rear of said plate adapted to underly said tongues, and means for securing a ski boot to said plate.

2. A ski binding in accordance with claim **1** wherein the securing means includes a stretch long thong binding.

3. A ski binding comprising in combination with a ski having a toe clamp adapted to release the toe of a ski boot on the exertion of a predetermined lateral force in either direction, a heel plate assembly disposed upon the ski in the heel region thereof, said assembly comprising a relatively thin circular mounting disk affixed to the ski in the heel region thereof, said disk having a cylindrical peripheral wall, and integral opposed tongues extending radially therefrom, said tongues being of less thickness than the plate, and spaced from the under surface of said disk, and a swivel plate of a thickness corresponding to the thickness of said disk, and having a central aperture to receive said disk, said plate having segmental arcuate inwardly projecting cheeks extending inwardly from opposite sides of said aperture, defining cylindrical surfaces substantially mating with opposite portions of the cylindrical wall of said disk, and said plate having arcuate segmental lugs disposed between said cheeks, of a thickness less than the thickness of said plate and adapted to project beneath said tongues, said lugs having curved surfaces adapted to closely embrace the peripheral wall of said disk beneath said tongues, and embracing the cylindrical wall of said disk adjacent said tongues, said cheeks, and said lugs defining angular spaces of a width greater than said tongues, and boot binding rings affixed to said plate on the opposite sides thereof.

4. A ski binding in accordance with claim **3** wherein a stretch long thong binding for the boot extends through the rings.

References Cited by the Examiner

UNITED STATES PATENTS

2,836,428	5/58	Marker	280—11.35
2,954,236	9/60	Osborn	280—11.35

FOREIGN PATENTS

1,077,640	5/54	France.

BENJAMIN HERSH, *Primary Examiner.*
A. HARRY LEVY, *Examiner.*