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SKI BINDING RELEASE CHECKING DEVICE

Original Filed April 22, 1965

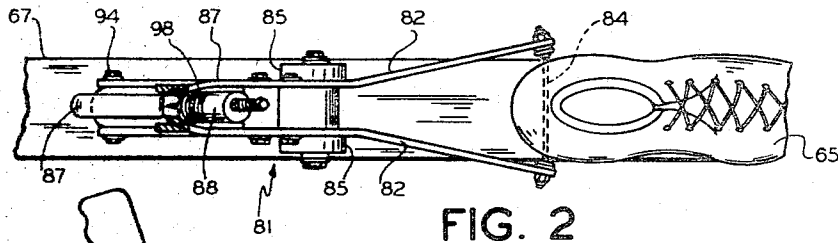


FIG. 2

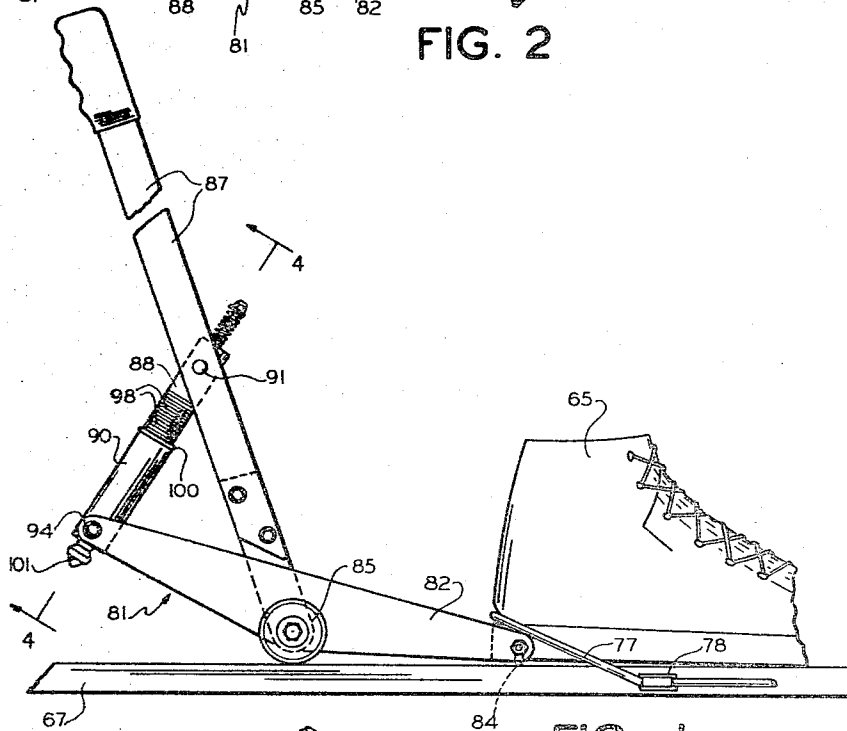


FIG. 1

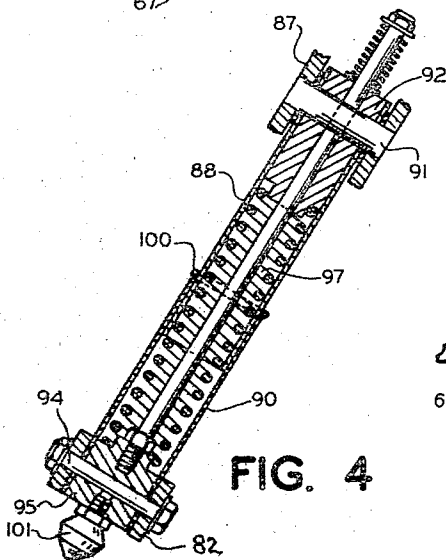


FIG. 4

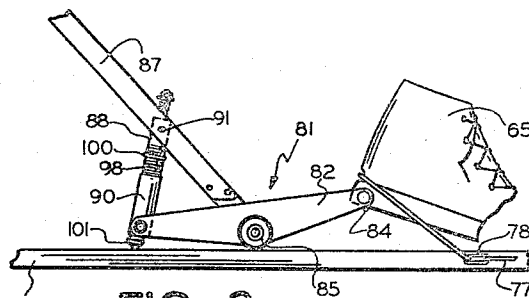


FIG. 3

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SKI BINDING RELEASE CHECKING DEVICE
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Original application Apr. 22, 1965, Ser. No. 452,448.
Divided and this application Apr. 5, 1966, Ser. No.
540,367

2 Claims. (Cl. 73—133)

This application is a division of copending application Ser. No. 452,448, filed Apr. 22, 1965, by the same applicants. The invention relates generally to ski equipment, and has particular reference to novel structure for checking the operation and adjustment of release type ski bindings such as are in widespread use at the present time.

In the invention a device is provided for checking the release performance of a ski binding in which a yieldable cable or the like is arranged to release in response to an upward movement of the ski boot heel relative to the ski, so that in the event of a forward fall the skier's foot will be released from the binding and will prevent broken bones, strains and sprains such as might result in the case of an improperly mounted or adjusted ski binding.

The basic concept underlying the present invention is that a vast majority of skiers are safety conscious and feel the need to be protected from broken bones, strains and sprains while enjoying the sport. These skiers purchase safety release bindings in the belief that these bindings produce the desired safety. However, no means has heretofore been provided that enables the skier to consistently adjust these bindings to a degree of safety within the limits of his ability, weight, age, physical condition and experience. All of the various models of bindings in use are adjustable beyond the point of safety for the individuals who use them.

It is, therefore, a main object of the invention to provide a means for proper adjustment of the ski binding devices above discussed and therefore to prevent many or all of the unnecessary accidents due to improper adjustment of the release mechanisms so involved.

Another and related object of the invention is to provide a means by which the safe forward release pressure of a skier's bindings, also known as the heel release pressure, can be determined and controlled.

These and other objects will become evident in a consideration of the following description and the accompanying drawings of the present invention, which provides novel structure for checking the release of a ski binding and for determining the safe pressure at which the release should be set to operate to prevent broken bones and strained muscles. Therefore, in the drawings:

FIGURE 1 is a side elevation of the release checking device of the invention which is particularly adapted for checking the heel engaging part of a releasable ski binding;

FIGURE 2 is a top plan view of the device of FIGURE 1;

FIGURE 3 is a reduced side elevation corresponding to FIGURE 1, but showing the parts just after the binding has released; and

FIGURE 4 is an enlarged longitudinal section through the actuator assembly taken substantially along the line 4—4 of FIGURE 1 and rotated 90°.

Having reference now to the drawings, the heel of a boot 65 is normally held down on a ski 67 by a cable 77 which passes under a hitch 78 on each edge of the ski and extends forwardly in a well known manner. The cable 78 extends to a point ahead of the boot where it is connected to a toggle type clamp (not shown). The clamp normally keeps the cable under tension but in-

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cludes a release mechanism that will allow the cable to loosen so that the boot heel can be raised from the ski in the event of a dangerous strain in this direction.

The heel release checking device of the invention includes a frame 81 comprising a pair of arms 82 the forward portions of which are bent outwardly as shown in FIGURE 2 so that the frame can straddle the rear portion of the boot. At their forward ends the frame arms 82 are connected by a braided steel wire 84 or the equivalent, which wire is bolted to the arms and is adapted to underlie the boot heel about an inch forward of the rear end thereof. Spaced behind the boot engaging wire 84, the frame is provided with fulcrum means in the form of a pair of rollers 85 having ski protecting rubber tires or the like.

An upwardly and rearwardly extending handle assembly 87 is pivotally connected to the frame 81 on the same pin or shaft as the rollers 85. At a point spaced above the pivot point, the handle assembly is connected by means of a movable actuator member 88 and coaxing tubular member 90 to the rear end of the frame as shown in FIGURE 1. The actuator member 88 is also tubular and is pivotally connected at its upper end to the handle assembly by means of a pin 91 which passes through a plug 92 in the end of the actuator.

The lower end of the actuator member 88 is telescopically received in tubular member 90, and the latter is pivotally connected at its lower end to the device frame by a pin 94 which passes through a plug 95. Mounted within the actuator and tubular member 90 is a calibrated compression spring 97 of the type described in said copending application Ser. No. 452,448, the ends of the spring bearing against the plugs 92 and 95. On its cylindrical exterior the actuator member is inscribed or otherwise marked with force indicating graduations 98. An O-ring 100 is mounted on the actuator and when the spring 97 is in its uncompressed condition, the upper side of ring 100 is in line with the zero graduation mark on the actuator when the lower side of the ring abuts against the top edge of member 90 as indicated in FIGURE 10.

In using the device, the wire 84 is positioned beneath the boot heel and the binding cable 78 is placed under tension in the usual manner just as though the boot were being mounted in the binding for skiing. This causes the device to be positioned on the ski as shown in FIGURE 1 and the operator grasps the upper end of the handle assembly and commences to move it in the counterclockwise direction as viewed in FIGURE 1. With no restriction on the forward end of the frame 81, such movement would tend to rock it around its fulcrum rollers 85 until the rear end of the frame came down into contact with the ski. However, with the boot and binding initially resisting any upward movement of the forward end of the frame, the movement of the handle causes the actuator member 88 to move farther into the tubular member 90 and compress the spring 97. The compression of the spring continues and its lower end exerts an ever increasing force against the rear end of the frame 81 until this force overcomes the downward force exerted by the binding on the boot and the binding releases.

Prior to the release of the binding and while the actuator is being moved farther into the member 90, the upper edge of the latter causes the O-ring 100 to be pushed upwardly on the actuator where it will remain after the spring returns to its uncompressed state. This is indicated in FIGURE 3 which shows the device, boot and binding just after the point of release. The graduation mark 98 on which the O-ring is positioned after the binding releases indicates the force required to effect the release. Thus, the graduation mark numbers shown in FIGURES 1 and 3 relate to a chart (not shown) which is pro-

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vided with the device. This chart has for a skier's weight and proficiency the graduation mark at which his binding should release, the chart being the result of a very substantial amount of research and testing. As an example, if a skier is classed as an intermediate in ability and weighs 165 lbs., the chart will show for him the number 12 and the O-ring 100 should be at that graduation mark when his binding releases or adjustment is required.

With further reference to FIGURE 3, it will be apparent that when the binding suddenly releases, the frame 81 rocks rapidly around the rollers 85 to bring the rear end of the frame down into engagement with the ski with considerable impact. To prevent damage to the ski when this happens, the lower end of the tubular member 90 is provided with a resilient bumper member 101 as shown.

While the element 100 is referred to as an O-ring and is shown in the drawings with a circular cross section, it will be apparent that other types of movable indicators with different cross sections can also be used.

From the foregoing description, it will be apparent that the invention disclosed herein provides a novel and highly useful device which is capable of materially increasing the safety of skiing as a recreational sport.

As will be understood by those familiar with the art, the invention may be embodied in other specific forms without departing from the spirit or essential characteristics thereof. The embodiment disclosed is, therefore, to be considered in all respects as illustrative rather than restrictive, the scope of the invention being indicated by the appended claims.

What is claimed is:

1. In a device for checking the release point of the heel engaging part of a releasable ski binding mounted on a

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ski, a frame having means at the forward end thereof adapted to underlie the heel of a ski boot mounted in the ski binding, roller means on said frame engageable with the ski rearwardly of the boot heel and forming a fulcrum for the frame whereby a downward force on its rear end will cause an upward force on the heel underlying means at its forward end, a handle assembly pivotally connected to said frame adjacent its fulcrum forming means and extending upwardly and rearwardly therefrom, means connecting said handle assembly at a point spaced above said fulcrum forming means with the rear end of the frame so that a downward force applied to the handle assembly is transmitted to the rear end of the frame, said connecting means including a movable tubular actuator telescopically received in a second tubular member and a spring positioned in said actuator and member against which the actuator is moved by the handle assembly until the resultant upward force on the boot heel causes the binding to release, and means which coact with graduation marks on said movable tubular actuator to indicate the point at which the binding releases.

2. A device as defined in claim 1 wherein the forward end of said frame is forked so as to straddle the rear portion of the ski boot, and said heel underlying means is a wire member extending across the forked end.

References Cited by the Examiner

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