United States Patent [19]

Halter

[11] **3,826,510**

[45] **July 30, 1974**

[54] **COMBINATION SKI LOCK AND SAFETY STRAP**

[76] Inventor: **John C. Halter,** 248 Miami, Park Forest, Ill. 60466

[22] Filed: **May 11, 1973**

[21] Appl. No.: **359,510**

[52] **U.S. Cl.** ..... **280/11.37 K,** 70/18, 70/312, 70/442, 280/11.35 N

[51] **Int. Cl.** **A63c 11/02,** E05b 73/00

[58] **Field of Search** .....280/11.37 K, 11.37 A, 1135 N; 70/18, 30, 58, 213, 442

[56] **References Cited**

UNITED STATES PATENTS

3,272,526	9/1966	Rumaner	280/11.37 K
3,354,675	11/1967	Quigg	280/11.37 K X
3,518,853	7/1970	Bolte	280/11.37 K X

FOREIGN PATENTS OR APPLICATIONS

629,119	9/1949	Great Britain	70/312

Primary Examiner—Kenneth H. Betts
Assistant Examiner—David M. Mitchell
Attorney, Agent, or Firm—Prangley, Dithmar, Vogel, Sandler & Stotland

[57] **ABSTRACT**

A combination ski lock and safety strap including an elongated cable having a male member on one end and a female member on the other end forming a lock mechanism. A control mechanism is operative to permit the male member to be securely maintained within the female member while at the same time preventing movement of the lock mechanism to the locked position thereof. The control mechanism is operative to permit easy release of the male member from the female member or to permit the lock to function in the normal manner.

11 Claims, 9 Drawing Figures

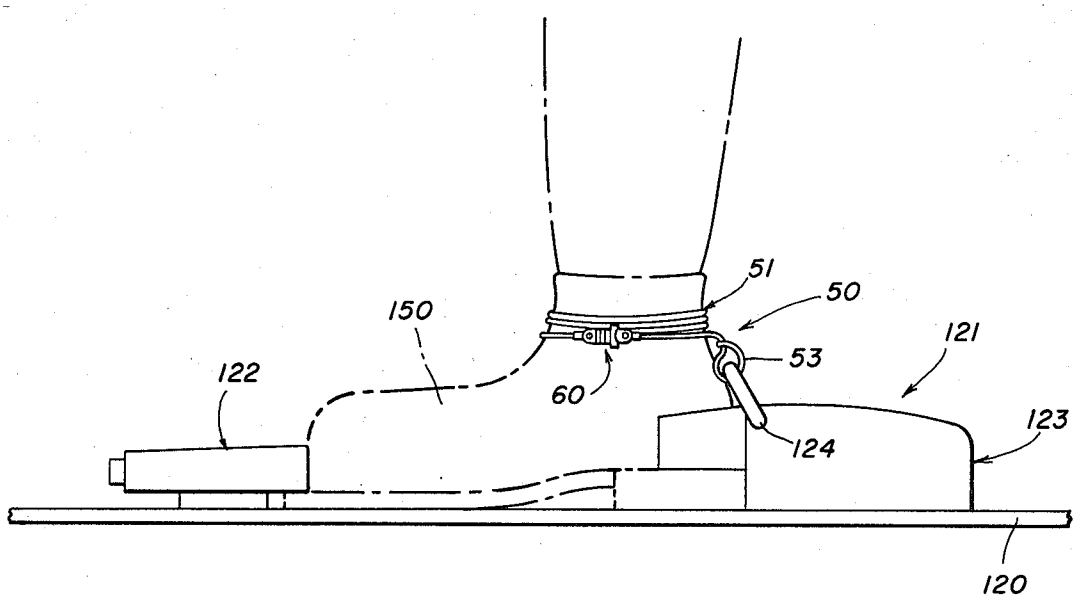


FIG. 1

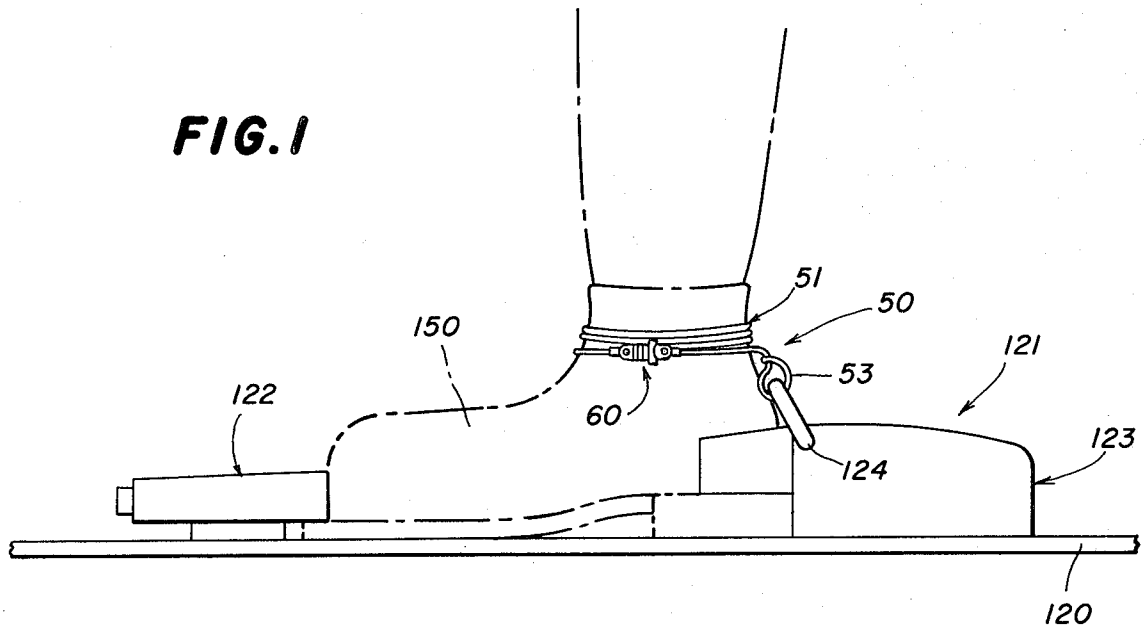


FIG. 2

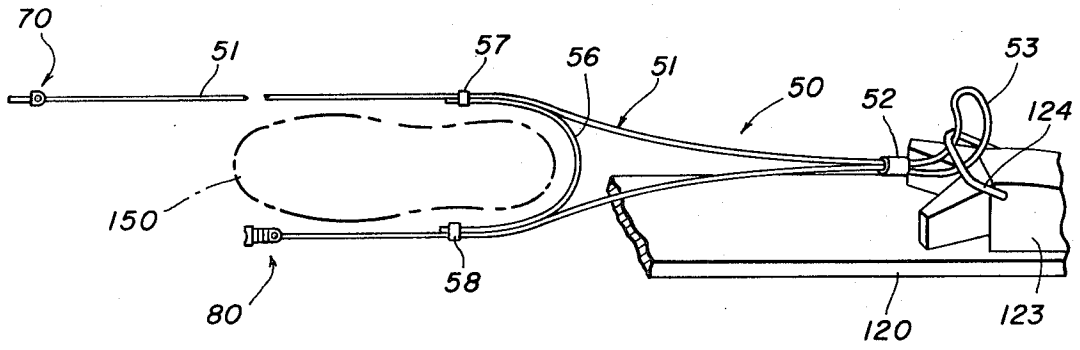


FIG. 3

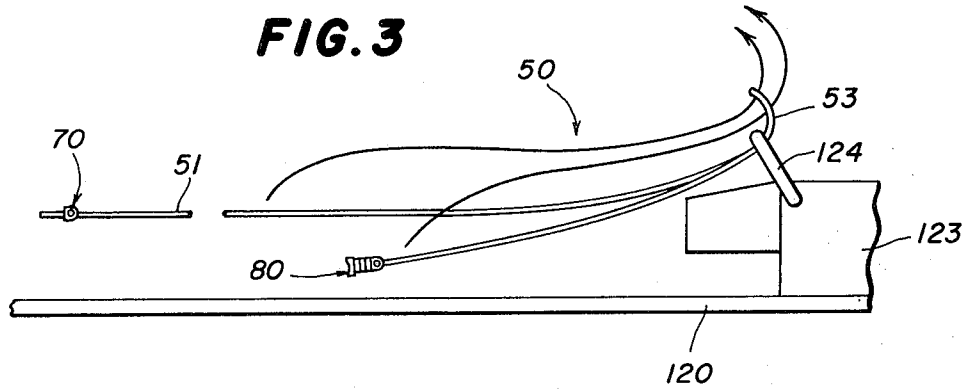


FIG. 4

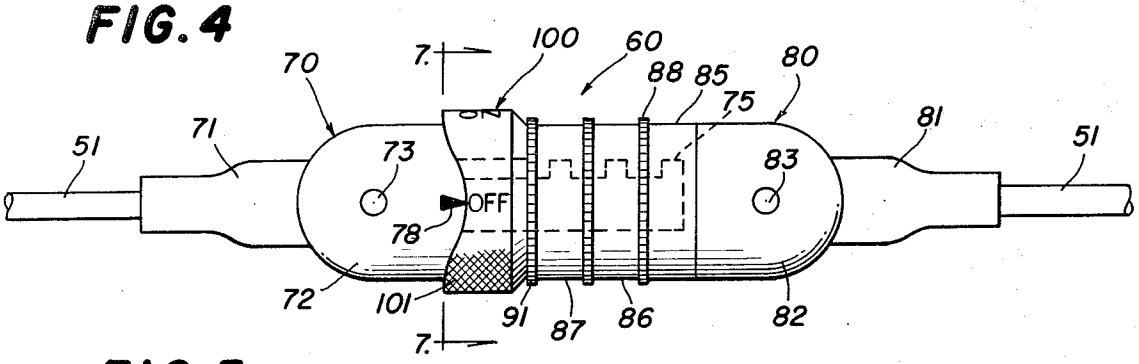


FIG. 5

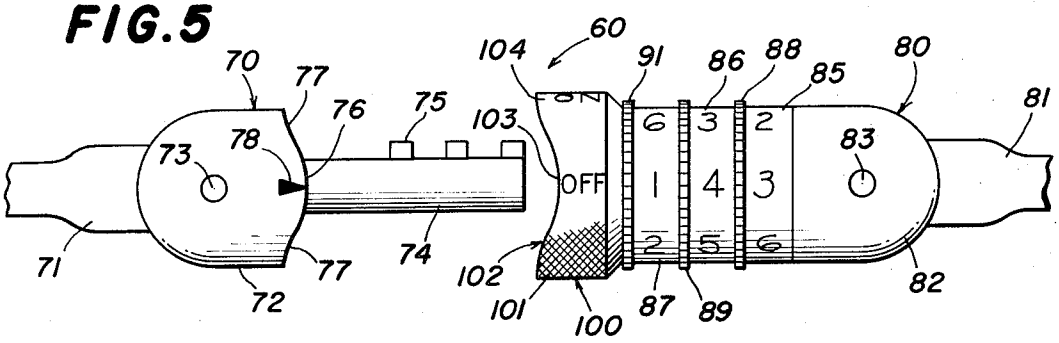


FIG. 6

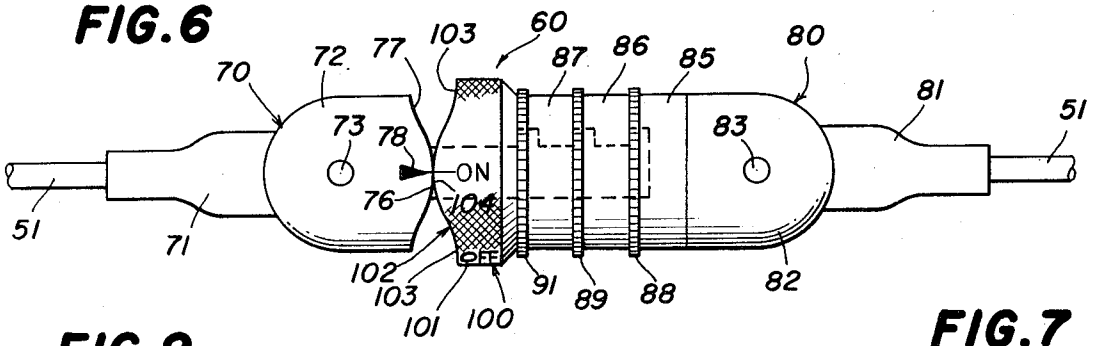


FIG. 9

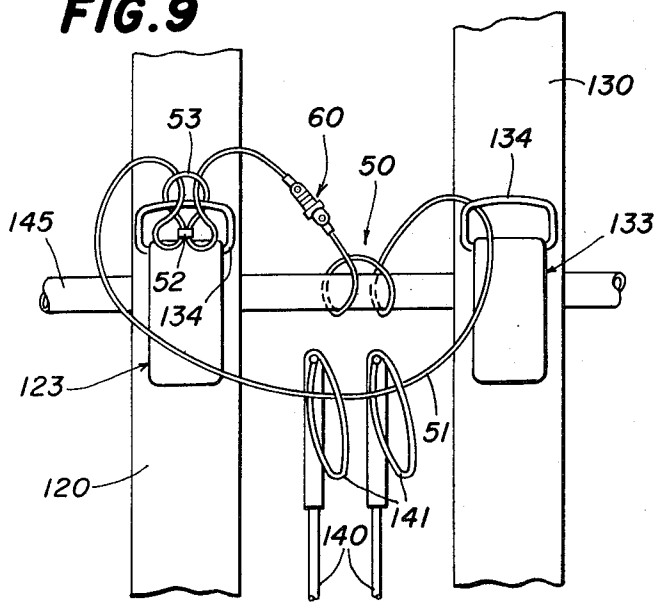


FIG. 7

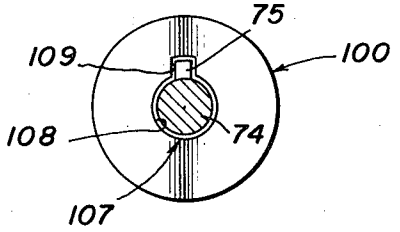
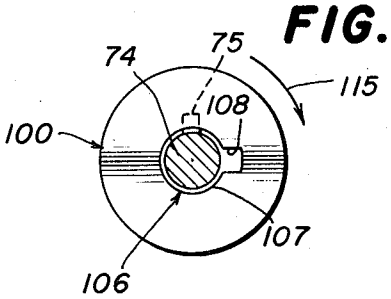


FIG. 8



COMBINATION SKI LOCK AND SAFETY STRAP

This invention relates to a combination ski lock and safety strap and more particularly to a mechanism which functions both as a combination lock and a quick release safety strap.

It is an important object of the present invention to provide a combination ski lock and safety strap, comprising an elongated cable having a male member on one end thereof and a female member on the other end thereof, the male member having an elongated shank with a plurality of lugs extending outwardly therefrom, the female member having an elongated slot therein for receiving the elongated shank and the lugs carried thereby, the female member having a plurality of locking rings movable between a locked position thereof wherein movement of lugs into and out of the slot is prevented and an unlocking position thereof wherein free movement of the lugs within the elongated slot is provided, and a control mechanism mounted on one of said members and movable between an engaged position wherein the locking rings in the unlocked position thereof are prevented from being moved to the locked position thereof and the elongated shank is firmly held in the elongated slot and a disengaged position thereof wherein the locking rings are movable between the locked and the unlocked positions thereof, whereby the combination ski lock and safety strap may be used as a safety strap when the locking rings are in the unlocked position thereof and the control mechanism is in the engaged position thereof thereby to permit easy removal of the male member from the female member by movement of the control mechanism to the disengaged position thereof and the combination ski lock and safety strap may be used as a ski lock when the control mechanism is in the disengaged position thereof and the locking rings are in the locked position thereof thereby firmly holding the male member within the female member.

Another object of the present invention is to provide a combination ski lock and safety strap of the type set forth wherein a first camming surface on the control mechanism cooperates with a second camming surface on the other member to position the male member with respect to the female member such that the locking rings of the female member are maintained in the unlocked position thereof, the first camming surface and the second camming surface further cooperating to permit the male member to be positioned with respect to the female member to allow the locking rings to move to the locking position thereof.

These and other objects of the present invention together with further objects and advantages thereof will best be understood by reference to the following specification taken in connection with the accompanying drawings wherein:

FIG. 1 is a side elevational view of a ski binding showing the invention in use as a safety strap;

FIG. 2 is a perspective view of the combination ski lock and safety strap showing the mounting thereof on the heel piece of the ski binding;

FIG. 3 is a side elevational view also showing the mounting of the combination ski lock and safety strap on the heel piece of the ski binding;

FIG. 4 is an elevational view of the lock mechanism of the present invention showing the male member firmly seated within the female member and the control mechanism in the disengaged position thereof;

FIG. 5 is a view like FIG. 4 with the male member longitudinally spaced from the female member;

FIG. 6 is a view like FIG. 4 showing the control mechanism in the engaged position thereof wherein the male member is locked within the female member and the locked rings of the female member are prevented from moving;

FIG. 7 is a sectional view of the lock mechanism shown in FIG. 4 taken along lines 7—7 thereof;

FIG. 8 is a sectional view like FIG. 7 showing the control mechanism in the operative position thereof; and

FIG. 9 is a front elevational view of a pair of skis showing the present invention in use as a ski lock.

Referring now to the drawings, there is shown a combination ski lock and sagety strap **50** having an elongated cable **51** provided with a clip **52** which forms a loop **53** in substantially the center thereof. A short piece of cable **56** is connected to the cable **51** at spaced apart points by a clip **57** and a clip **58,** thereby to form a rear support portion of the safety strap. The cable **51** is provided with a lock **60** comprised of a male member **70** and a female member **80** and a control mechanism **100.** More particularly, the male member **70** is connected to the cable **51** by an end piece **71** which is pivotally mounted to an enlarged head portion **72** of the male member by a rivet **73.** An elongated shaft **74** extends outwardly of the enlarged head portion **72** and has three spaced apart perpendicularly extending lugs **75** thereon. The end of the enlarged head portion **72** away from the cable **51** is formed into a cam which has a sinuous surface with a protruding camming surface **76** and an indented camming surface **77.** An indicator mark **78** is provided in the center of the protruding camming portion **76.**

At the other end of the cable **51** there is provided the female member **80** which is attached to an end piece **81** firmly connected to the cable **51,** the female member having an enlarged head **82** pivotally mounted to the end piece **81** by a rivet **83.** The female member has an elongated keyhole shaped slot (not shown) extending longitudinally of the member and also has three lock rings **85, 86** and **87** each provided with a knurled head **88, 89** and **91** thereon which cooperate to provide a combination lock of the type set forth in British Patent No. 629,119 having a specification acceptance date of Sept. 13, 1949, the disclosure of which is incorporated herein by reference. It is seen, therefore, that the female member **80** and the male member **70** of the lock **60** cooperate to provide a normal combination lock of the type wherein longitudinal movement of the male member **70** with respect to the keyhole shaped slot in the female member **80** is permitted or prevented by the position of the individual lock rings **85, 86** and **87.**

The control mechanism **100** is mounted on the female member **80** at the end thereof and includes a ring member **101** having a sinuous camming surface **102** including an indented portion **103** and a protruding portion **104.** A keyhole shaped slot **107** extends through the ring **101** and is complimentary to the keyhole shaped slots in each of the lock rings **85, 86** and **87,** the slot **107** being provided with a circular portion **108** and a rectangular portion **109** thereby to receive the shaft **74** and the lugs **75** of the male member **70.** The control mechanism **100** is rotatable independently with respect

to the female member **80** and more particularly with respect to each of the lock rings **85, 86** and **87.**

The lock rings **85, 86** and **87** of the female member **80** are movable between an unlocking position thereof wherein the keyhole shaped slots of each of the lock rings are aligned one with the other so as to permit the insertion thereinto of the male member **70** and a locked position thereof wherein at least one of the lock rings **85, 86** and **87** is rotated so as to position the keyhole shaped slot therein out of alignment with the other keyhole shaped slots so as to prevent longitudinal movement of the male member with respect to the female member. This type of combination lock is well known in the art.

The control mechanism **100** is movable between a disengaged position thereof wherein the keyhole shaped slot **107** is in alignment with the other ones of the keyhole shaped slots in the lock rings **85, 86** and **87** when the lock rings are in the unlocked position thereof. When the control mechanism **100** is in the disengaged position thereof, as shown in FIG. **4,** the indented portion **103** of the sinuous surface **102** is in position to receive the extended portion **76** of the enlarged head **72** thereby to permit the male member **70** to be firmly seated within and fully extended into the female member **80.** In the position shown in FIG. **4** wherein the male member **70** is fully seated within the female member **80** and the control mechanism **100** is in the disengaged position thereof, the lock rings **85, 86** and **87** may be operated between the unlocked position thereof wherein the male member **70** is longitudinally movable within the female member **80** and the locked position thereof wherein the male member **70** is prevented from moving longitudinally within the female member **80.**

When the lock rings **85, 86** and **87** are in the unlocked position thereof and the male member **70** is firmly seated within and fully extended into the female member **80** movement of the control mechanism **100** from the disengaged position thereof to the engaged position thereof results in a slight longitudinal movement of the male member with respect to the female member from the position shown in FIG. **4** to the position shown in FIG. **6.** As seen in FIG. **6,** the male member **70** has been moved longitudinally of the female member **80** a sufficient amount to position the lugs **75** between the keyhole slots of adjacent locking rings, thereby to prevent rotational movement of the locking rings **85, 86** and **87** to maintain the locking rings in the unlocked position thereof. The male member **70** is prevented from disengaging from the female member **80** because the ring **101** of the control mechanism **100** has been rotated as shown by the arrow **115** in FIG. **8** to position the keyhole shaped slot **106** out of alignment with the lugs **75** and more particularly, the rectangular opening **108** is rotated 90° with respect to the lugs **75** to prevent further outward movement of the male member **70** with respect to the female member **80.** It is seen, therefore, that with the control member **100** in the engaged position thereof the lock rings **85, 86** and **87** are maintained in the unlocked position thereof while the male member **70** is firmly locked within the female member **80.** The male member **70** is quickly disengaged from the female member **80** by movement of the control mechanism **100** 90° in a direction opposite to the arrow **115** thereby to align the keyhole shaped slot **106** with the shaft **74** and the lugs **75.** Quick disengagement of the male member **70** from the female member **80** is an important feature of the present invention as well as the prevention of the lock rings **85, 86** and **87** from being rotated from the unlocked position thereof during use of the combination **50** as a safety strap, all for a purpose hereinafter set forth.

Referring now to FIGS. **1** through **3** and **9,** there is disclosed a pair of skis **120** and **130,** the ski **120** having a binding **121** consisting of a toe piece **122** and a heel piece **123** having a ring **124** extending therefrom. Similarly, the ski **130** is also provided with a binding including the heel piece **133** with a ring **134** extending therefrom. Further, there is shown a pair of poles **140** each provided with a strap **141,** the skis **120** and **130** resting on a support bar **145** as shown in FIG. **9.**

When it is desired to use the combination lock and safety strap **50** as a ski lock, as shown in FIG. **9,** the cable **51** is passed through the rings **124** and **134** of the skis **120** and **130** through the straps **141** on the poles **140** and around a support bar **145.** The control mechanism **100** mounted on the female member **80** is moved to the disengaged position thereof as shown in FIGS. **4** and **5** and the male member **70** is inserted therethrough and into the female member **80.** When the control mechanism **100** is in the disengaged position thereof, the indented portion **103** of the sinuous camming surface **102** is in alignment with the extended portion **76** of the camming surface on the enlarged head **72** of the male member **70,** thereby to permit full insertion of the male member **70** into the female member **80,** as seen in FIG. **4.** In this position, the indicator **78** is in alignment with the OFF indicia on the control mechanism **100.** When the male member **70** is fully inserted into the female member **80** as seen in FIG. **4,** the lugs **75** fit within the keyhole slots in each of the locking rings **85, 86** and **87** which are in position wherein their individual keyhole slots are aligned to receive the shank **74** carrying the lugs **75** thereon. Rotation of one or more of the locking rings **85, 86** and **87** results in locking the male member **70** within the female member **80** in the usual manner. Release of the male member **70** from the female member **80** may be obtained only by positioning the individual locking rings **85, 86** and **87** in a predetermined position wherein the individual keyhole shaped slots of the rings are aligned to permit the passage therethrough of the shank **74** and the lugs **75.**

When it is desired to use the combination lock and safety strap **50** as a safety strap, the cable **51** is passed through a ring **124** in the manner shown in FIGS. **2** and **3** wherein the loop **53** is initially passed through the ring **124** and thereafter the remainder of the cable **51** along with the male member **70** and the female member **80** is passed through the loop **53,** as seen in FIG. **3,** to provide the configuration shown in FIGS. **1** and **9.** The short cable **56** provides a rear support for the heel of the boot **150** positioned in the binding **121** and against the heel piece **123,** the remainder of the cable **51** being wrapped around the boot in the usual manner for safety straps. The individual locking rings **85, 86** and **87** are moved to their prearranged position wherein the individual keyhole slots are in alignment to receive the male member **70** and more particularly the shank **74** with the lug **75** thereon. As seen in FIG. **4,** the male member **70** is fully inserted into the female member **80** and the control mechanism **100** is in the disengaged position thereof. Since it is important to provide a quick release for the safety strap when a skier falls so

that the ski can be repositioned on the boot if the ski comes off or if the skier is injured and it is necessary to remove the ski quickly, the locking rings **85, 86** and **87** remain in their aligned position while the control mechanism **100** is moved from the disengaged position thereof shown in FIG. **4** to the engaged position thereof shown in FIG. **6.** In FIG. **6,** the ring **101** has been rotated 90° so as to position the extended portion **104** of the sinuous camming surface **102** in alignment with the extended portion **76** of the camming surface on the head **72** and more particularly in position so that the indicator **78** is in alignment with the ON indicia of the ring **101.** When the control mechanism **100** is in the engaged position shown in FIG. **6,** the individual locking rings **85, 86** and **87** are prevented from moving as hereinbefore set forth due to the position of the lugs **75** with respect to each of the locking rings while at the same time the male member **70** cannot be longitudinally withdrawn from the female member **80** due to the rotation of the ring **101** which misaligns the keyhole shaped slot **106** with the rearmost lug **75.** In this position, the combination lock and safety strap **50** can function as a safety strap in the usual manner while at the same time providing quick release which permits removal of the male member **70** from the female member **80** without knowledge of the combination which is needed to release the lock **60** when it functions as hereinbefore described as a lock to prevent theft of skis and other equipment.

While there has been described what is at present considered to be the preferred embodiment of the present invention, it will be understood that various modifications and alterations may be made herein without departing from the true spirit and scope of the present invention, and it is intended to cover in the appended claims all such modifications and alterations as fall within the true spirit and scope of the present invention.

What is claimed is:

1. A combination ski lock and safety strap, comprising an elongated cable having a male member on one end thereof and a female member on the other end thereof, said male member having an elongated shank with a plurality of lugs extending outwardly therefrom, said female member having an elongated slot therein for receiving said elongated shank and said lugs carried thereby, said female member having a plurality of locking rings movable between a locked position thereof wherein movement of lugs into and out of said slot is prevented and an unlocking position thereof wherein free movement of said lugs within said elongated slot is provided, and a control means mounted on one of said members and movable between an engaged position wherein said locking rings in the unlocked position thereof are prevented from being moved to the locked position thereof and said elongated shank is firmly held in said elongated slot and a disengaged position thereof wherein said locking rings are movable between the locked and the unlocked positions thereof, whereby said combination ski lock and safety strap may be used as a safety strap when said locking rings are in the unlocked position thereof and said control means is in the engaged position thereof thereby to permit easy removal of said male member from said female member by movement of said control mechanism to the disengaged position thereof and said combination ski lock and safety strap may be used as a ski lock when said control means is in the disengaged position thereof and said locking rings are in the locked position thereof thereby firmly holding said male member within said female member.

2. The combination set forth in claim **1,** wherein said male member and said female member are each pivotally mounted on said cable.

3. The combination set forth in claim **1,** wherein said elongated cable has a clip thereon forming a loop between said male member and said female member.

4. The combination set forth in claim **1,** wherein the number of locking rings on said female member corresponds to the number of lugs on said shank.

5. The combination set forth in claim **1,** wherein said control means is mounted on and rotatable with respect to said female member.

6. The combination set forth in claim **1,** wherein said control means is rotatable 90° with respect to said one member between the engaged and the disengaged positions of said control means.

7. The combination set forth in claim **1,** wherein said control means is a ring having a keyhole shaped slot therethrough, said keyhole shaped slot being constructed and arranged to accept therethrough said shank and lugs of said male member.

8. A combination ski lock and safety strap, comprising an elongated cable having a male member on one end thereof and a female member on the other end thereof, said male member having an elongated shank with a plurality of lugs extending outwardly therefrom, said female member having an elongated slot therein for receiving said elongated shank and said lugs carried thereby, said female member having a plurality of locking rings movable between a locked position thereof wherein movement of lugs into and out of said slot is prevented and an unlocking position thereof wherein free movement of said lugs within said elongated slot is provided, and a control means mounted on one of said members having a first camming surface thereon engaging a second camming surface on the other of said members, said control means being movable between an engaged position wherein said first camming member and said second camming member cooperate to position said lugs with respect to said locking rings to prevent said locking rings from moving from the unlocked position thereof and said elongated shank is firmly held in said elongated slot and a disengaged position thereof wherein said first camming surface and said second camming surface cooperate to permit said locking rings to be movable between the locked and the unlocked positions thereof, whereby said combination ski lock and safety strap may be used as a safety strap when said locking rings are in the unlocked position thereof and said control means is in the engaged position thereof thereby to permit easy removal of said male member from said female member by movement of said control means to the disengaged position thereof and said combination ski lock and safety strap may be used as a ski lock when said control means is in the disengaged position thereof and said locking rings are in the locked position thereof thereby firmly holding said male member within said female member.

9. The combination set forth in claim **8,** wherein said control means is mounted on and rotatable with respect to said female member.

10. The combination set forth in claim **8,** wherein said control means is rotatable 90° with respect to said

one member between the engaged and the disengaged positions of said control means.

11. The combination set forth in claim **8,** wherein said control means is a ring having a keyhole shaped slot therethrough, said keyhole shaped slot being constructed and arranged to accept therethrough said shank and lugs of said male member.

* * * * *