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Salomon

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[54] **SAFETY STRAP FOR A SKI BOOT**

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[52] **U.S. Cl.** ..... **280/11.35 N**

[51] **Int. Cl.**[2] **A63C 9/08;** A63C 11/00

[58] **Field of Search** ..... 280/11.35 N, 11.35 C

[56] **References Cited**

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Assistant Examiner—David M. Mitchell

[57] **ABSTRACT**

A safety-strap device for skis intended to keep the ski boot attached to the ski after the release of the safety-fixing device and thus to prevent accidental separation of the ski and consequent possible injury to the skier, said safety-strap device comprising a loop-forming strap fixed by at least two points on each side of the ski, passing in front of the heel zone and behind the boot upper, and a clamping strap member intended to be closed over the front of the boot upper, at least one of the extremities of said clamping strap being slidably mounted on said loop-forming strap, said device further comprising an elastic member with a restricted degree of elasticity, mounted on one of said strap members and creating thereon a slack portion to facilitate release of the boot after release of the safety-fixing device.

12 Claims, 3 Drawing Figures

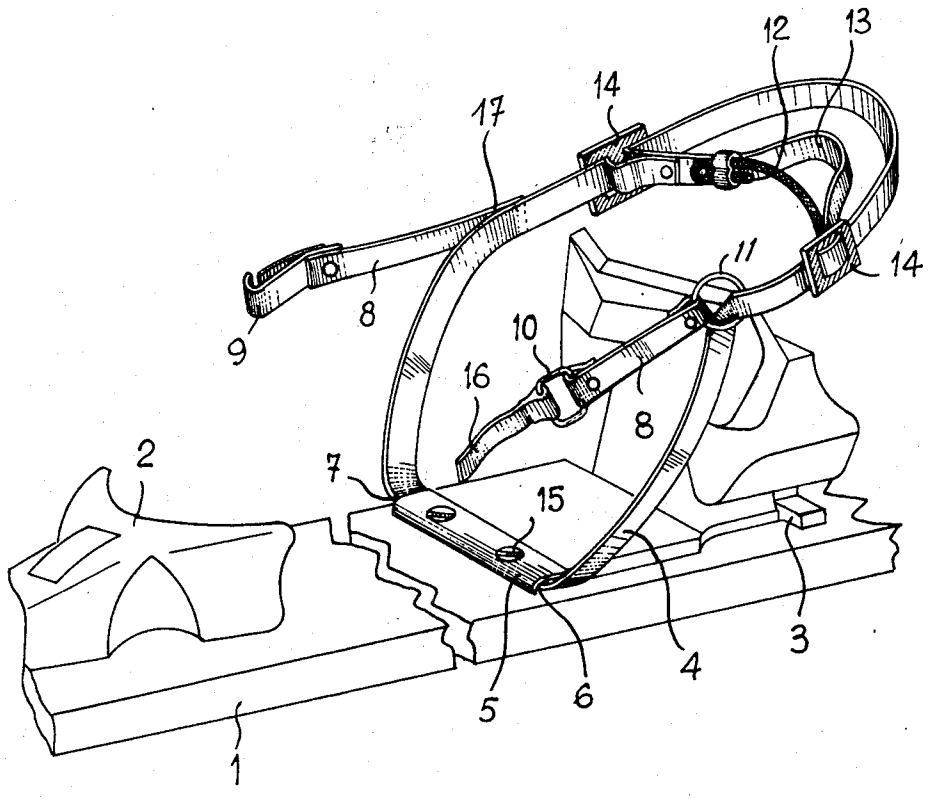


FIG.1

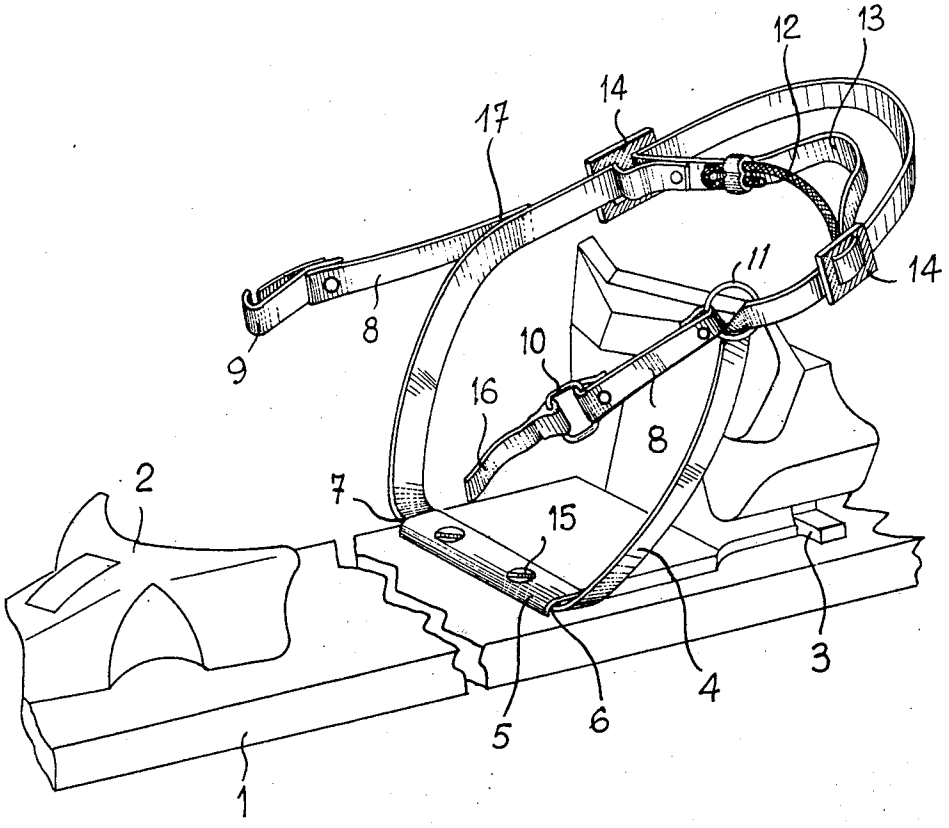


FIG. 2

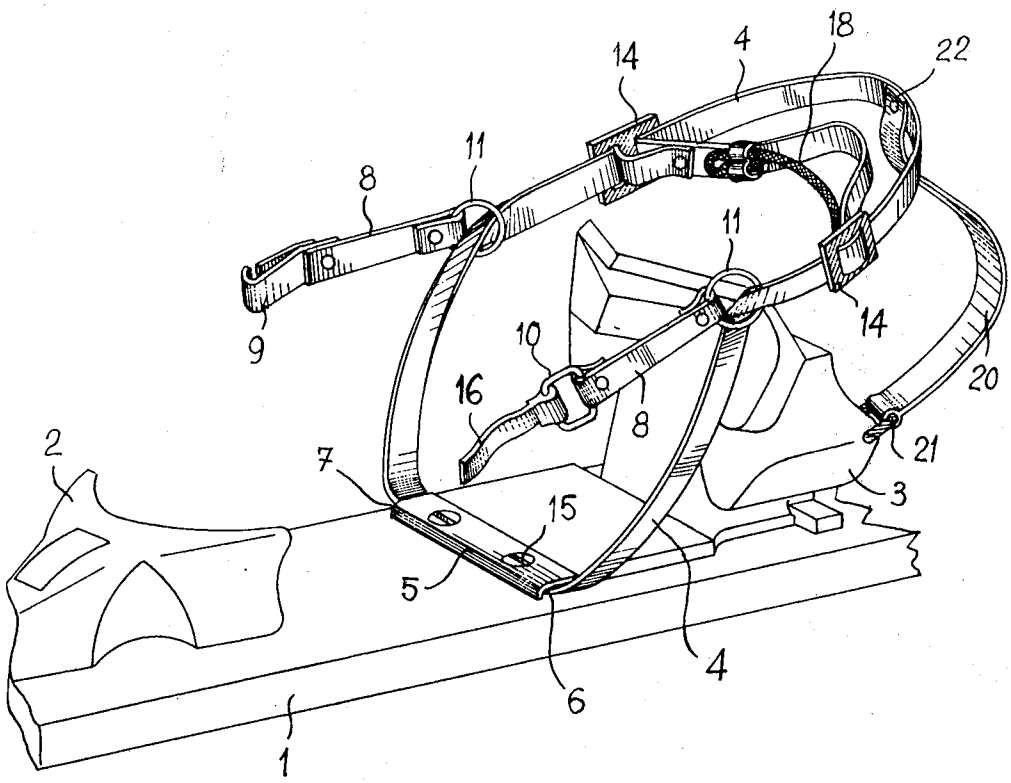
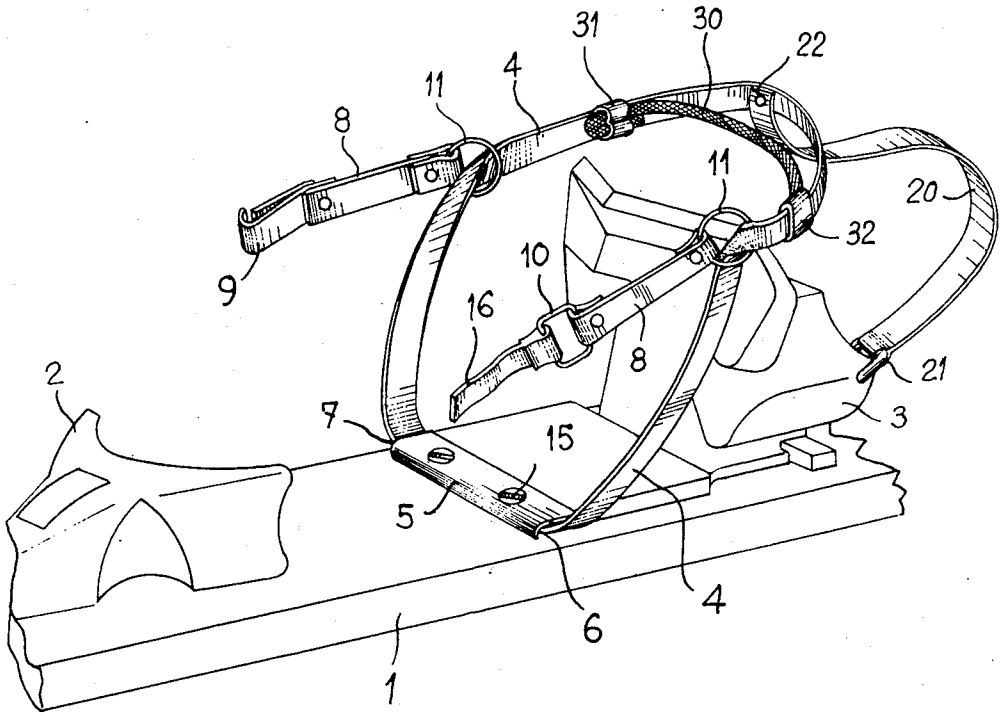


Fig.3



SAFETY STRAP FOR A SKI BOOT

The invention relates to a safety strap intended to hold the boot coupled to the ski after the opening of the safety fixing devices. There exist safety-strap systems which permanently join the boots to the skis. These systems have the purpose of preventing complete separation of the ski from the boot following an accident such as a fall, which has caused the opening of the fixing devices.

These safety straps, generally of leather or flexible synthetic material, are arranged when at rest in a disorderly manner on the ski, and the skier is compelled to put them in order before he can insert his foot, so as to put on his ski, and then winds them suitably around his boot and finally hooks them. These are fastidious operations which are often difficult to carry out on a steep slope or in deep snow, especially with thick gloves such as are worn by skiers.

The strap according to the invention has for its object to facilitate these operations; the strap comprises:

On the one hand, a strap in the form of a loop mounted on the ski and intended to be passed behind the upper of the boot;

and on the other hand, a clamping strap comprising a releasable closure and intended to be passed over the front portion of the boot upper.

One of these straps comprises an elastic portion with controlled elasticity, so that the boot can be freed from the fixing device after the release of this latter; according to the main characteristic feature of the invention, at least one of the extremities of the clamping strap is mounted slidably on the loop-shaped strap.

In an alternative form of embodiment of the invention, the strap is such that the loop-shaped strap is fixed on the ski at at least two points located on each side of the ski, in the vicinity of the zone intended for the heel of the boot sole and in this case, according to an additional characteristic feature of the invention, the two extremities of the clamping strap are fixed to two rings sliding along the loop-shaped strap, on each side of this latter. These rings could equally well be replaced by hooks, buckles, snap-hooks, thongs, etc.; the essential according to this feature of the invention is that the extremities of the clamping straps slide along the loop straps.

The loop-shaped strap may be mounted on the ski in different ways. It may be fixed directly on the ski, as will be described below with reference to the drawings, but it may also be mounted on a plate pivoting about a vertical shaft fixed on the ski; in particular the two hooking points located on each side of the ski may be fixed on each side of the pivoted plate designed so as to support a heel-fixing device.

The skier who wishes to hook the clamping straps grips the two free extremities of the closure and pulls them upwards so as to hook them together on the front of the boot upper. During this operation, the loop-shaped part of the strap which passes behind the boot upper is also lifted and placed in position. Thus, by means of this arrangement of the slidably-mounted clamping straps, the skier can conveniently attach the safety strap.

According to an additional characteristic of the invention and for the purpose of facilitating the correct positioning of the loop behind the boot, the part of the strap which forms this loop is shaped in a corkscrew on each side of the boot, and this corkscrewed portion is movable along the strap thongs according to the position occupied by the ring or rings.

Another advantage of the invention results from the running noose effect which is produced during releases of the fixing devices. In fact, the upper of the boot is increasingly clamped as the tensile force on the strap increases. The boot is thus perfectly held fast by the strap.

It should be noted from now that in order to obtain this effect, it is not essential for the two extremities of the clamping strap to be slidably mounted on the loop-shaped strap which surrounds the rear part of the boot. It is only necessary for one or the other of the extremities to slide in order that the running noose may be formed.

The elastic portion of the strap makes it possible to have the slack essential for the boot to be freed from the fixing device after release of this latter. However, by virtue of the elasticity of this part of the strap, the latter is constantly clamped on the boot, so that the releasable closure is not liable to open of itself. Furthermore, the skier is not hindered in his movements and the strap cannot become hooked either on the other boot or on external objects.

In an alternative form, the elastic portion of the strap may be mounted on either of the loop-shaped straps or clamping straps. In addition, this elastic portion may be slidably mounted on the strap concerned in accordance with the size of the boot.

Finally, the elasticity of this elastic portion may be controlled, so that the extension of the strap does not exceed a pre-determined value. In fact, it is not desirable for the boot to be separated too far from the ski, since in this case the latter has the possibility of rotating and hurting the skier.

Thus, the combination of a strap system forming a running knot and an elastic portion enables the boot to be disengaged during release, while retaining the ski connected to the foot of the skier without it being able to become accidentally detached, since the clamping strap is further stretched when the foot is freed from the fixing device, or to whirl round, since the slack does not permit of this.

In certain alternative forms of embodiment of the invention, the loop-shaped strap is fixed on the ski in at least two attachment points located on each side of the ski, in the vicinity of the zone reserved for the heel of the boot sole. This arrangement of the strap limits the amplitude of the movements of the ski during an accidental release of the fixing devices. For this reason, the skier is less liable to be injured by the ski.

In other alternative forms of construction, and especially with the object of limiting the amplitude of undesirable movements of the ski, there is provided a third point of attachment of the loop-shaped strap on the ski. This point of attachment on the ski, preferably located behind those previously referred to, is connected to the rear portion of the loop-shaped strap.

This additional connection between the ski and the straps may also be employed to hold the straps in position in order that they do not hinder the rest position of the parts of the ski intended to receive the boot. In this case, the connection between the third point of attachment and the straps is semi-rigid.

It is also possible to hold the straps outside the position reserved for the boot by using a semi-stiff or semi-

elastic material, such as a flat strip of leather or suitable synthetic material for making the loop-shaped straps. The Applicants have described such strap systems in their U.S. Pat. No. 3,770,288 of Nov. 6, 1973.

Finally, the unhookable closure may be obtained in various ways. It may in particular be a hook engaging in a rectangular ring. In this case, this ring may also be that which slides along the loop-shaped strap. The closure system may be mounted at any point of the clamping strap; in particular in an alternative form of embodiment of the invention it is fixed on one of the sliding rings.

There will now be described a few non-limitative examples of embodiment of the invention, reference being made to the accompanying drawings, in which:

FIG. 1 is a strap comprising a single sliding ring;

FIG. 2 is a strap comprising two sliding rings and fixed to a third point of attachment on the ski;

FIG. 3 shows an alternative form of construction of the strap illustrated by FIG. 2.

FIG. 1 shows a safety strap mounted on a ski 1 on which is fixed a front abutment 2 and a heel recess 3. The strap comprises a loop-shaped strap 4 fixed on the ski by means of a metal channel section 5 by screws 15. The loop-shaped strap 4 is fixed to the ski at two attachment points 6 and 7 located on each side of this latter. The clamping strap 8, shown in the unhooked position, comprises two parts on which the hooking system is mounted. This hooking system is constituted on the one hand by a hook 9 and on the other by a rectangular ring 10 which is handled by means of a strap-end 16. One of the extremities of the clamping strap is fixed to a ring 11 slidably mounted on the loop-shaped strap 4. The other extremity is assembled at 17 to the loop-shaped strap on the opposite side to the ring.

In this alternative form of construction, the elastic portion of the strap is constituted by an elastic member 12 rigidly fixed on a band 13 which limits its extension. The extremities of this band are fixed on two buckles 14 which slide along the strap 4. The skier can adjust the length of the strap in dependence on the size of his boot, by sliding the buckles 14 along the strap 4.

The elastic portion of the strap provides the slack necessary for the boot to be disengaged from the fixing devices 2 and 3 without there being any play at rest between the clamping strap and the boot, especially on each side of this latter.

FIG. 2 shows an alternative form of construction of the safety strap according to the invention. There will be recognized the majority of the parts described with reference to FIG. 1, in particular the ski 1, the fixing devices 2 and 3, the loop-shaped strap 4, the clamping strap 8, (shown unhooked) and the elastic system 12, 13 and 14. In the case of this alternative form of construction, the two extremities of the clamping strap 8 are slidably mounted on the loop-shaped strap by means of two rings 11. It will immediately be observed from the drawing that the two side portions of the loop 4 are twisted when they pass into the rings 11. In this way, each of the portions of the loop 4 separated by the twisted portion, may be suitably applied flat against the part of the boot corresponding.

The rear extremity 22 of the strap 4 is connected by a semi-stiff strap 20 to an attachment point 21 located on the ski behind the two attachment points 6 and 7 of the strap 4. This strap 20 has the function on the one hand of limiting the amplitude of the movements of rotation of the ski about the foot, in order that the ski cannot injure the skier, and on the other hand of holding the strap 4 in such a manner that it does not interfere with the position reserved on the ski for the boot.

FIG. 3 represents an alternative form of the elastic portion of the fixing device illustrated by FIG. 2. In this case, the extremities 31, 32 of the elastic member 30 are fixedly mounted on the strap 4 which acts as a band to limit the extension of the elastic member 30.

What I claim is:

1. A safety-strap device intended to keep a ski boot attached to a ski after the release of a safety boot fixing device, said strap device comprising two distinct straps:

a continuous loop-forming strap mounted on said ski in at least two points located on each side of said ski, in front of the zone reserved for the heel of the boot sole and passing behind the upper of said boot;

and a clamping strap comprising two parts and a hooked closure device adapted to close the two parts over the front portion of the upper of said boot, one of the parts of said clamping strap being mounted to said loop-forming strap; one of said straps comprising an elastic member attached at two points along said one strap to provide sufficient slack in the safety device to ensure that said boot can be disengaged after the release of said safety fixing device; the other part of said clamping strap being slidably mounted on said loop-forming strap by a ring means to thereby allow said clamping strap to slide relative to said loop-forming strap whereby, in a single operation of hooking the parts of the clamping strap, a skier lifts and places in position the portion of the loop-forming strap passing behind the upper of said boot.

2. A safety-strap device as claimed in claim 1, in which said one parts of said clamping strap is fixed by assembly on said loop-forming strap.

3. A safety strap device as defined claim 1, wherein said one of the parts of said clamping strap is slidably mounted on said loop-forming strap by a second ring means.

4. A safety-strap device as claimed in claim 3, in which the two parts of said clamping strap are fixed on two rings sliding on each side of said boot along said loop-forming strap.

5. A safety-strap device as claimed in claim 4, in which said loop-forming strap is twisted in the zone over which said sliding movement takes place.

6. A safety strap device as claimed in claim 4, said hooked closure device being composed of a ring on one part of the clamping strap in which a hook fixed on the other part of said clamping strap is removably engaged.

7. A safety strap device as claimed in claim 1, in which said elastic member is mounted on one of said straps and has its extremities mounted on said one strap member on the side facing said ski boot.

8. A safety-strap device as claimed in claim 7, in which the elasticity of said elastic member is limited by a non-extensible band fixed to the extremities of said elastic member.

9. A safety-strap device as claimed in claim 7, in which at least one of the extremities of said elastic member is mounted in an adjustable manner on said one strap member, by means of a sliding buckle fixed on said extremity.

10. A safety-strap member as claimed in claim 4, in which said elastic member is mounted on the rear portion of said loop-forming strap.

11. A safety-strap device as claimed in claim 1, in which at least those parts of said loop-forming strap located on each side of said ski boot are made of a semi-stiff material so as to reserve a space sufficient for the movement of said boot when putting on or removing said boot.

12. A safety-strap device as claimed in claim 11, in which the rear portion of said loop-forming strap is coupled by a semi-stiff connection to a point of attachment located on the said ski behind the two points of attachment on said ski of the loop-forming strap.

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