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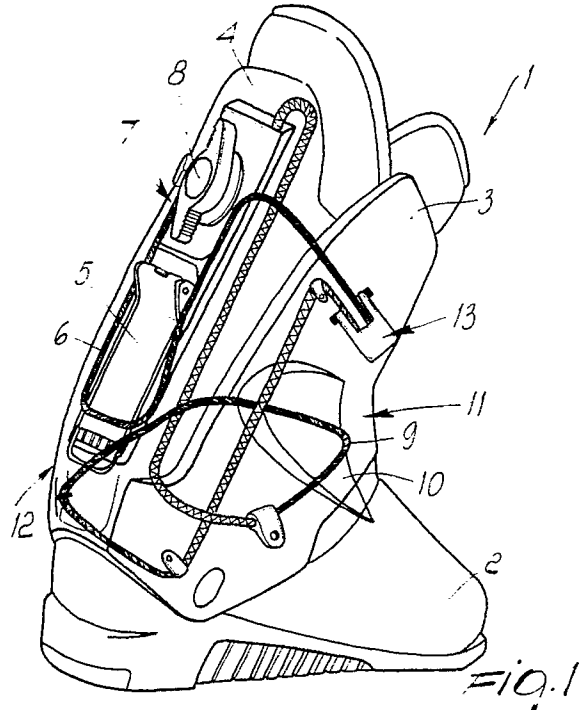
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64 **Securing and adjustment device particularly for ski boots.**

57 A securing and adjustment device particularly usable in ski boots (1) which comprise a vertical lever (5) and/or a knob (8) associated with at least one pulley adapted to takeup at least one traction element (6,9). The peculiarity of the device consists of the fact that it has at least one lever (13) for the partial slackening of the at least one traction element which can be activated independently of the vertical lever and/or the knob. It is thus possible to preset the amount of the slackening of the traction element so as to allow for example a partial opening of the quarters (3,4) and/or slackening of the degree of securing of the foot to allow the skier to walk optimally.



EP 0 433 639 A2

SECURING AND ADJUSTMENT DEVICE PARTICULARLY FOR SKI BOOTS

The present invention relates to a securing and adjustment device particularly usable in ski boots.

The use of vertical levers or circular devices for the securing of the quarters and/or of the foot is currently known in said ski boots.

The vertical levers can rapidly take up and release a selected length of a traction element, and define two distinct conditions for the ski boot: a closed position or an open position.

However, ski boots having said vertical levers have a considerable disadvantage if the skier has to walk, as for example when queuing up to gain access to ski-lifts or during a pause of his skiing activity.

For example in the case of rear-entry ski boots, the opening of the vertical lever, which is for example adapted to secure the quarters, in fact causes the full release of the traction element and therefore the complete opening of the rear quarter, and the calf thus lacks the necessary support while walking.

This entails not only discomfort in movement but also the possible penetration of snow or mud inside the boot as well as the possible slipping of the boot off the skier's foot.

Circular devices usually comprise a knob associated with at least one pulley for the take up of one or more traction elements such as cables; these devices allow a fine adjustment of the degree of securing but do not have so-called "memory", i.e. the ability to store the selected degree of securing.

This means that every time the skier must again find the correct degree of securing, for example of the quarters and/or of the foot, by means of an operation which is certainly not as rapid as that which can be obtained with a vertical lever, since it is necessary to rotate the knob repeatedly.

It is furthermore uneasy to actuate the knob, which is usually located at the rear region of the rear quarter.

As a partial solution to these disadvantages, the German patent No. DE 3506057, filed on February 21, 1985, claiming a priority of August 14, 1984, discloses a ski boot comprising a vertical lever, an essentially U-shaped element for guiding a cable being transversely pivoted proximate to the free end of said lever.

The rotation which can be imparted to said transmission element allows the partial opening of the rear quarter but at the same time has some disadvantages: the operation of rotating the transmission element in fact is not easy, since it is necessary to first open the vertical lever, then rotate the transmission element and subsequently close the vertical lever.

The arrangement of the transmission element at the free end of the vertical lever furthermore does not facilitate its grip, especially considering its use at low temperatures while the user wears gloves.

The presence of the transmission element at the vertical lever furthermore prevents the arrangement of further adjustment devices thereon.

European patent No. 0229274, filed on November 26, 1986, claiming a priority of January 9, 1986, discloses a ski boot comprising a vertical lever which has one end pivoted to a pawl which is in turn pivoted transversely to a slider which is associated at the back of the rear quarter.

Two positions can thus be imparted to the vertical lever by rotating the pawl by 180 degrees.

Therefore, though this boot allows the slackening of an amount of cable which is equal to twice the length of the pawl, disadvantages are nonetheless observed: in order to walk it is in fact necessary to open the vertical lever, rotate the pawl and then close the vertical lever again, because if this last operation is not performed, the quarter may open completely.

It is therefore necessary for the user to perform as many as three operations, all of which are on elements located at inconvenient points, such as the rear region of the rear quarter of the boot.

The aim of the present invention is therefore to eliminate the disadvantages described above in known boots by providing a device adapted to partially release the degree of securing of the leg and/or of the foot in a rear-entry ski boot, with an easy and rapid operation for the skier.

Within the scope of this aim, an important object is to provide a device which, once it is activated, allows the skier to walk optimally, maintaining an optimum support for the calf and preventing the penetration of snow or mud into the boot.

Another important object is to provide a device which allows to restore, in a rapid and easy manner, the degree of securing achieved prior to the partial release of the degree of securing of the leg and/or foot.

Another important object is to provide an easily accessed and easily operated device.

Still a further object is to provide a device which associates with the preceding characteristics that of being structurally simple and easy to manufacture, as well as reliable and safe in use.

This aim, these objects and others which will become apparent hereinafter are achieved by a securing and adjustment device, particularly for ski boots, comprising a vertical lever and/or a knob,

associated with at least one winder member adapted to takeup at least one traction element, characterized in that it has at least one separate means for the partial slackening of said at least one traction element, said means being activated independently of said vertical lever and/or knob.

Further characteristics and advantages of the invention will become apparent from the detailed description of some particular but not exclusive embodiments, illustrated only by way of non-limitative example in the accompanying drawings, wherein:

figure 1 is a rear isometric view of a rear-entry ski boot having a vertical lever and a knob, and provided with a device according to the invention;

figure 2 is a schematic top view of a ski boot provided with the device, according to a second aspect of the invention.

With reference to the above described figures, the reference numeral 1 indicates a rear-entry ski boot constituted by a front quarter 3 and a rear quarter 4 associated with a shell 2.

A vertical lever 5 is freely pivoted at one end at the rear surface of said rear quarter and engages a first traction element which is constituted by a first cable 6, for example adapted to secure the front quarter 3 and the rear quarter 4.

A circular device 7 is arranged above the vertical lever 5 and is composed of a knob 8 which actuates an adapted winder which is internal to the rear quarter. The winder is adapted to takeup a second traction element, such as a second cable 9, which is appropriately transmitted inside the boot and is adapted to secure a presser 10 arranged at the foot instep region 11 and/or at the heel region 12.

The securing and adjustment device is constituted by a separate means for the partial slackening of said first cable and/or of said second cable, said means being constituted by an auxiliary lever 13.

Said auxiliary lever can be advantageously articulated at one of its ends for example laterally to the front quarter or may optionally be arranged at the shell 2.

An end of the first cable 6 and an end of the second cable 9 are therefore connected to the auxiliary lever 13, as illustrated in figure 1.

By rotating the auxiliary lever 13 from the closure position to the opening position, it is thus possible to release an amount of the first cable 6 and of the second cable 9 which is such as to allow the skier to walk comfortably though the vertical lever 5 is closed and the knob 8 is locked.

The activation of the auxiliary lever 13 is in fact independent of an actuation of the vertical or circular lever.

In figure 2, the auxiliary lever 113 is freely pivoted at one of its ends transversely to the shell 102, and an end of a single cable 114 is connected thereto; said cable 114 is conveniently transmitted inside the shell so as to embrace the foot at the instep region 111 and/or at the metatarsal region 115, and is connected, at its other end, for example to a circular device 107.

The auxiliary lever 13, 113 thus has the function of releasing a limited amount of the traction element or elements connected thereto, thus allowing to achieve, when it is for example combined with a vertical lever, a partial opening of the rear quarter so as to keep it adherent to the calf during walking or while waiting prior to skiing.

If the auxiliary lever 113 is instead combined with a circular device, it can allow to partially reduce the degree of securing of the quarters and/or of the foot while walking or waiting prior to skiing, no intervention being necessary for example on the circular device, which would lose the memory of the degree of securing.

The selected degree of securing can in fact be restored once the auxiliary lever 113 is closed.

It has thus been observed that the invention has achieved the intended aim and objects, since the device allows the skier to achieve, in a rapid and easy manner, the partial release of one or more traction elements for the securing of the leg and/or of the foot so as to allow optimum walking.

The device in fact allows to maintain an optimum support for the calf, preventing the penetration of snow or mud into the boot and in any case maintaining a given securing at the foot as well.

The auxiliary lever 13, 113 can furthermore be arranged in a location which can be easily accessed by the skier, who can thus locate it promptly and act thereon rapidly, simply and univocally to pass from a condition of optimum closure to one which allows the skier to walk temporarily and at the same time to restore the previous optimum condition of closure.

The device according to the invention is naturally susceptible to numerous modifications and variations, all of which are within the scope of the same inventive concept.

The dimensions and the materials which constitute the individual components of the device may also naturally be the most appropriate according to the specific requirements.

Where technical features mentioned in any claim are followed by reference signs, those reference signs have been included for the sole purpose of increasing the intelligibility of the claims and accordingly such reference signs do not have any limiting effect on the scope of each element identified by way of example by such reference signs.

Claims

1. Securing and adjustment device, particularly for ski boots, comprising a vertical lever (5) and/or a knob (7,107), associated with at least one winder member (7,8) adapted to takeup at least one traction element (6,9), characterized in that it has at least one separate means (13,113) for the partial slackening of said at least one traction element, said means being activated independently of said vertical lever and/or knob. 5
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2. Device according to claim 1, characterized in that a vertical lever (5) is freely pivoted at one of its ends at the rear surface of the rear quarter (4) of said ski boot (1) and interacts with a first traction element which is constituted by a first cable (6) adapted to secure the front (3) and rear (4) quarters of said ski boot, a knob (8) being arranged above said vertical lever and actuating an adapted pulley which is internal to said rear quarter for the takeup of a second traction element such as a second cable (9) which is conveniently guided inside said boot and is adapted to secure an adapted presser arranged at the foot instep region and/or at the heel region. 15
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3. Device according to claim 1, characterized in that said separate means for the partial slackening of said first traction element and/or of said second traction element is constituted by an auxiliary lever (13,113) which is preferably articulated at one of its ends laterally to said front quarter (3) or at the shell (2). 30
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4. Device according to claim 3, characterized in that an end of said first traction element (6) and/or an end of said second traction element (9) is connected to said auxiliary lever (13). 40
5. Device according to claim 3, characterized in that upon the opening of said auxiliary lever a portion of said first (6) and/or second traction element (9) is released which is such as to allow the partial opening of said front (3) and rear (4) quarters and/or the slackening of the securing of said foot inside said shell (2), though said vertical lever (5) is closed and the knob (8) is secured. 45
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6. Device according to claim 3, characterized in that said auxiliary lever (113) is freely pivoted at one of its ends transversely to the shell (102), an end of a single traction element (114) being connected to said lever, said single traction element being guided within said shell 55

(102) so as to embrace the foot at the instep and/or metatarsal region, said single traction element being connected to a knob (107) at its other end.

