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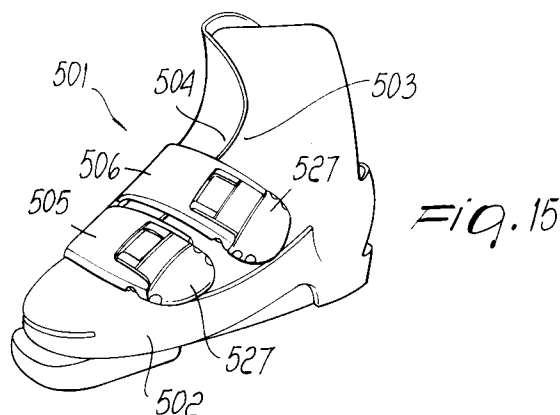
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I-20123 Milano (IT)(54) **Ski Boot.**

(57) A ski boot of the type including a shell (502) which is provided with two flaps (504,503), having at least one closure flap (506) surrounding the flaps (503,504). The closure flap has a first side which is associated with the shell and a second side which interacts with a lever (527) and with a ratchet-pawl assembly connected to the shell. The ski boot allows to achieve optimum securing of the foot while maintaining an aesthetically clean profile for the boot.

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The present invention relates to a ski boot, particularly of the type which can be opened at the rear or at the center and comprising a shell, provided with a front longitudinal opening, with which at least one quarter is associated.

In conventional ski boots, the problem is felt of ensuring good comfort for the user's foot as well as optimum securing thereof.

Closed-shell boots are known in which this securing is achieved using cables or straps arranged inside the shell and connected to tensioning means.

This structure entails, especially at the regions of the instep and of the upper metatarsus, the forming of localized pressure areas due to the use of said securing cables or straps which pass above these foot regions.

Other known structures are constituted by boots having a shell which is open at the front and in which the opening is closed by overlapping flaps or by means of a folding tongue; securing of said flaps or tongue occurs by means of known hook-like levers.

These hook-like levers, which are associated with the shell or with flaps of covering elements, protrude considerably therefrom: this is a problem from the aesthetic point of view, because the linearity of the boot is altered, but is also mainly a technical problem. During skiing, in fact, the levers may touch the snow, making the skier fall or, while the boot is being carried, may accidentally catch in other protruding bodies, causing the breakage of the levers.

Furthermore, it is very difficult to hook the levers to close the flaps, because there is usually snow or ice on the hook elements; the skier must therefore engage the hook on the rack in such conditions, while wearing skiing gloves, which make the operation even more difficult.

The aim of the present invention is to overcome the above technical problems, by providing a ski boot which allows to achieve optimum surrounding and securing of the foot, maintaining optimum comfort for the foot and improving the technical and aesthetic features of the boot.

Within the scope of the above aim, another important object is to provide a ski boot which optimally surrounds the foot and the leg, particularly the instep and upper metatarsal region of the foot, ensuring optimum comfort even when the boot is closed and locked.

A further object is to facilitate the closure of the boot for the skier.

Another important object is to provide a ski boot which is effectively waterproof and snowproof.

Another object is to provide a ski boot which is reliable and safe in use and has low manufacturing costs.

This aim, these objects and others which will become apparent hereinafter are achieved by a ski boot which comprises a shell provided with a front longitudinal opening, characterized in that it comprises at least one flap which surrounds said opening and is associated with said shell at a first side, said at least one flap interacting, at the second side, with securing means and with means for permanent connection to said shell.

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

figure 1 is a schematic view of the ski boot, according to a first aspect of the invention;

figure 2 is a sectional detail view, taken along the plane II-II of figure 1;

figure 3 is a sectional detail view, taken along the plane III-III of figure 2;

figure 4 is a side view of the first side of the flap associated with the shell;

figure 5 is a view, similar to figure 1, of a further embodiment;

figure 6 is a sectional detail view, taken along the plane VI-VI of figure 5;

figure 7 is a view, similar to figure 1, of still a further embodiment;

figure 8 is a sectional detail view, taken along the plane VIII-VIII of figure 7;

figure 9 is an exploded detail view of a portion of the boot shown in figure 7;

figure 10 is a partially sectional detail view showing the interaction of the second side of the flap, with the means for securing to the shell;

figure 11 is a view, similar to figure 1, of a further embodiment;

figure 12 is a sectional detail view, taken along the plane XII-XII of figure 11;

figure 13 is a view, similar to figure 4, of a further embodiment;

figure 14 is a sectional detail view, taken along the plane XIV-XIV of figure 13;

figure 15 is a left hand side perspective view of a boot according to a sixth embodiment of the invention;

figure 16 is a right hand side perspective view of the boot of figure 15;

figure 17 is a cross section detail view of the boot of figures 15 and 16.

With reference to the above figures, the reference numeral 1 designates the ski boot, which comprises a shell 2 having overlapping flaps or provided with a longitudinal opening 3 formed at the region 4 which affects the upper metatarsal region and, at least partially, the foot instep.

At least one quarter 5 is associated with the shell 2, and a flap 6 is associated at the longitudinal opening 3. Flap 6 surrounds the opening and has a first side 7 which affects the internal lateral region of the foot.

First side 7 is associated with the shell 2, or rigidly coupled to the shell 2 for example by means of adapted first rivets 8.

The flap 6 also has a second side 9 which is arranged approximately laterally to the outer region of the foot and interacts with adjustable securing means and with means for permanent connection to the shell 2.

Said securing means are, for example, constituted by one or more traction elements, such as a cable 11 which is associated at one end with an adjustment device such as, for example, a conventional knob 10 having a threaded axial seat for a complementarily threaded bush which is associated with the end of cable 11.

The cable exits from the second side 9 and affects an adapted guide 12 which is arranged at an adapted first seat 13 formed on the shell 2 and is rigidly coupled to the shell for example by means of an adapted second rivet 14.

Inside the guide 12, the cable 11 is advantageously arranged within an adapted sheath 15. The assembly thus formed is then guided inside the shell 2, possibly passing transversely below an insole 16.

The sheath accommodating the cable is then made to pass outside the shell 2, for example at adapted first lateral holes 17, to connect it to means for tensioning the cable, such as for example vertical levers 18, or winders.

The use of the present invention is as follows: the particular connection of the flap 6, at the first side 7 and at the second side 9, to the shell 2 by virtue of the securing means and of the connecting means allows, if the tensioning means are not activated, to nonetheless keep the flap 6 connected to the shell, allowing its loosening for foot entry but preventing its overturning.

This, together with the fact that the flap 6 can be made of a material having a different rigidity with respect to the shell and the quarter, allows to achieve optimum surrounding of the foot in the instep and upper metatarsal regions while allowing an extremely easy insertion of the foot, since the means for securing and connection to the shell do not affect the region on which the longitudinal opening 3 is formed.

Furthermore, the particular arrangement of the securing and connection means allows the boot to have a highly linear profile with no protruding elements which might interact with the snow or catch in other elements while the boot is being carried.

Finally, the constant engagement of the flap with the shell, by virtue of the securing means and of the connecting means, considerably facilitates the closure operation for the skier, since it is sufficient to activate the tensioning means. It is therefore no longer necessary for the skier to mutually engage the engagement elements, constituted for example by a rack and a ring associated with a lever.

The invention has thus achieved the intended aim and objects, a ski boot having been obtained in which optimum surrounding of the foot is achieved by using securing means and means for connecting the flap to the shell which facilitate putting on the boot and are integrated in the profile of the boot, maintaining a continuous connection between the various elements to be secured, in order to facilitate the closure operation.

In fact, preventing the flap from overturning, allows to achieve optimum tightness against infiltration of water or snow even when the securing means and the connection means are released.

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

Thus, for example, figure 5 illustrates a ski boot 101 comprising a shell 102 provided with a front longitudinal opening 103 at the instep and upper metatarsal region 104.

At said region 104 there is a flap 106 having a first side 107 rigidly coupled at the shell 102 by means of adapted first rivets 108 and a second side 109 which interacts with adjustable means for securing and for connection to said shell.

Said means are constituted by a cable 111 which has a first end 119 rigidly coupled to the shell 102 at the part on which the first side 107 is superimposed.

Said cable 111 then affects the shell 102, one or more times, transversely and externally, and is guided at adapted first guides 120 and second guides 121 which are alternatively fixed respectively at the shell 102, in a region adjacent to the second side 109, and inside the flap 106, in an adapted second seat 122 which is transverse to said flap.

The second end 123 of the cable 111 is instead connected to tensioning means, such as a winder 118, or to a lever which is advantageously arranged to the rear of the quarter 105.

This solution, too, allows to achieve the intended aim and objects, since the connection means, and the shell securing means constituted by the cable 111, tend to lower the flap 106 at the outer surface of the shell 102, preventing the overturning of the second side 109 of the flap 106 when the tensioning means are deactivated.

Since the first guides 120 can be temporarily arranged at the second seat 122, this solution also allows to improve the aesthetic profile of the boot, since the flap 106 has no protruding elements.

Figures 7 and 8 illustrate a further embodiment for a ski boot 201, which comprises a shell 202 on which a front longitudinal opening 203 is formed at the instep and upper metatarsal region 204.

At least one flap 206 is arranged at the region 204 and has a first side 207 which is rigidly coupled to the shell 202 by means of adapted first rivets 208.

The flap 206 has a second side 209 which is slidingly associated with the outer lateral surface of the shell 202 by using adapted permanent-connection means, such as second rivets 214 which are slideable within adapted slots 224 formed transversely to the shell 202.

This therefore allows the second side 209 to slide transversely to the shell 202, nonetheless maintaining its connection to the shell.

The securing means comprise an internally threaded bush 225 which is arranged in the interspace between the outer lateral surface of the shell 202 and the inner lateral surface of the flap 206, proximate to the first side 207 of the flap 206.

The bush 225 is rigidly coupled to the overlying flap 206, and a complementarily threaded end of a traction element, such as a cable 211, is associated with the bush. The cable 211 is contained, at its other end, within a tube 234 which is transversely pivoted, by means of a first pivot 226, between the wings 227a and 227b of a lever 218. The lever 218 is transversely pivoted, at one end, by means of a second pivot 228, to the wings of a base 229 which is rigidly coupled to the underlying shell 202 by means of adapted second rivets 214.

An adjustment element, such as a knob 235, protrudes from the tube 234 and is rigidly coupled to the cable 211 at the end which is contained in the tube.

Rotation of the knob 235 thus causes the cable 211 and particularly its threaded end which engages the bush 225, to rotate rigidly with the knob.

The working length of the cable 211 is thus adjusted.

An adapted third seat 230 for accommodating the lever 218 is formed on the flap 206, starting from the second side 209 and at the cable 211 and at the lever 218. The third seat can be partially closed by using an adapted covering flap 231 which is pivoted at the first pivot 226 at one end and is slideable, at its other end, through an adapted seat formed on the bush 225 in the interspace between the internal lateral surface of the flap 206 and the bush.

In this embodiment, too, when the lever 218 is opened, the first and second sides of the flap 206

remain nonetheless connected to the shell 202.

As an alternative to the use of the second rivets 214 and of the slots 224, it is possible to use the embodiment shown in figure 10, wherein the third seat 230 formed on the flap 206 is closed by a cross-member 232 at the second side 209. The base 229 is arranged at said third seat and has, at its longitudinal ends, adapted tabs 233 which surmount the flap 206 so as to both keep said flap adjacent to the outer lateral surface of the shell 202 and allow the sliding of the second side 209.

The longitudinal extension of the base 229 is of course shorter than that of the third seat 230, as shown in figure 10.

Figures 11 and 12 illustrate a further embodiment for a ski boot 301, which comprises a shell 302 provided with a longitudinal opening 303 at the instep and upper metatarsal region 304.

Again, there is a flap 306, and adapted fourth seats 334 are formed proximate to its first side 307 for pawls 335 which interact in a ratchet-like manner with an underlying rack 336 formed at one end of a band 337 which is pivoted, at its other end, by means of a first pivot 326, between the wings 327 of a lever 318 which is in turn pivoted, at one end, by means of a second pivot 328, to the wings which protrude from a base 329 rigidly coupled to the shell 302 by means of adapted second rivets 314.

The second side 309 of the flap 306 is associated with the shell 302 by means of adapted third rivets 338 which act in adapted slots 324 formed at the shell.

In order to protect the band 337, the flap 306 has a tab 339 which is consequently located at the third seat 330 in order to also accommodate the lever 318.

Figures 13 and 14 illustrate a further embodiment of a ski boot which comprises a shell 402 of the type having overlapping flaps and thus in any case allowing, at the instep and upper metatarsal region 404, to move the flaps away from each other in order to insert and remove the foot.

At least at the foot instep region it is possible to arrange a flap 406, the first side 407 whereof is slidingly associated with the underlying shell 402 by using adapted first rivets 408 rigidly coupled to the shell and are slideable at adapted slots 424 formed transversely to the flap 406.

The second side 409 of the flap 406 is rigidly coupled to the shell 402 by means of adapted second rivets 414, proximate to which a base 429 is rigidly coupled to the shell 402; the end of a lever 418 is pivoted to said base.

A means for the micrometric takeup of a traction element, such as a cable 411, is associated with said lever 418; said takeup means is constituted for example by a knob 410.

The cable 411 passes at an adapted second seat 422 formed on the flap 406 and is then locked, at one end, at the first rivets 408.

It is thus possible to secure the flaps of the shell by actuating the lever 418 although the flap 406 is always adjacent to the shell.

Figures 15-17 illustrate a ski boot 501 according to a sixth aspect of the invention.

The ski boot 501 comprises a shell 502 having two overlapping flaps 503 and 504.

A closure flap 506 is connected to the flap 504 and has at least one lever 527 pivoted at the free end.

The lever 527 is also pivoted, at one end, to a slider 528 having a pawl 535.

A rack 536 is connected to the shell flap 503 and engages the slider 528 and pawl 535 assembly.

By operating the pawl 535, the slider 528 can be selectively positioned on the rack 536 thereby selecting the degree of closure of the closure flap 506 by the lever 527.

Advantageously, the closure flap 506 is adapted to completely embrace the slider and rack pawl assembly, in the closed position, as shown in the figures.

The materials and the dimensions which constitute the individual components of the present invention may also be the most pertinent 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. Ski boot comprising a shell (2,102,202,302,402,502) which is provided with a front longitudinal opening (3,103,203,303), characterized in that it comprises at least one flap (6,106,206,306,406,506) which surrounds said opening and is associated with said shell at a first side (7,107,207,307,407,504), said at least one flap interacting, at the second side (9,109,209,309,409,503), with securing means (11,111,211,311,411,527) and with means for permanent connection to said shell.
2. Ski boot according to claim 1, characterized in that said securing means are associated at said second side of said at least one flap and are constituted by at least one traction element (11) which is associated, at one end, with at

least one adjustment device (10), said one or more traction elements protruding from said second side and affecting an adapted guide (12) which is arranged at an adapted first seat (13) formed on said shell and is rigidly coupled to said shell by means of an adapted second rivet (14).

3. Ski boot according to claim 2, characterized in that said at least one traction element is constituted by at least one cable (11), said at least one cable being associated, at one end, with said at least one adjustment device, which is constituted by a knob (10) having a threaded axial seat for a complementarily threaded bush associated with the end of said at least one cable.
4. Ski boot according to claim 3, characterized in that each one of said at least one cable is contained within an adapted sheath (15) which is guided inside said shell, passing transversely below an insole (16), the assembly constituted by said cable and said sheath passing outside said shell at adapted first lateral holes (17), said cables being connected, at one end, to means for applying tension to said cable, such as vertical levers (18).
5. Ski boot according to one or more of the preceding claims, characterized in that adjustable means for securing to said shell are associated proximate to said second side (109) of said flap (106), said means being constituted by a cable (111) having a first end (119) rigidly coupled to said shell at the part on which said first side (107) is superimposed, said cable affecting said shell one or more times transversely and externally and being guided at adapted first (120) and second (121) guides which are alternatively rigidly coupled respectively at said shell, in a region adjacent to said second side, and inside said flap, in an adapted second seat (122) which is transverse to said flap.
6. Ski boot according to claim 5, characterized in that the second end (123) of said cable (111) is connected to tensioning means (118) which are advantageously arranged to the rear of said quarter.
7. Ski boot according to one or more of the preceding claims, characterized in that, when said tensioning means are activated, said at least one cable lowers said at least one flap (106) at said second side (109) adjacent to the outer surface of said shell, whereas, when said

means are deactivated, said at least one cable prevents the overturning of said second side.

8. Ski boot according to claim 7, characterized in that said first guides (120) can be temporarily arranged at said second seat (122) formed on the inner lateral surface of said at least one flap. 5
9. Ski boot according to one or more of the preceding claims, characterized in that a second side (209) of said at least one flap (206) is slidably associated with the outer lateral surface of said shell (202) by using adapted permanent-connection means, such as second rivets (214) slideable within adapted slots (224) formed transversely to said shell. 10 15
10. Ski boot according to claim 9, characterized in that said securing means comprise an internally threaded bush (225) which is arranged in the interspace between said outer lateral surface of said shell (202) and the inner lateral surface of said at least one flap (206) proximate to said first side (207) of said at least one flap, said bush being rigidly coupled to said overlying at least one flap (206), a complementarily threaded end of a traction element, such as a cable (211), being associated with said bush, said traction element being contained, at its other end, within a tube (234) which is transversely pivoted, by means of a first pivot (226), between the wings (227a,227b) of a lever (218) which is transversely pivoted, at one end, by means of a second pivot (228), to the wings of a base (229) which is rigidly coupled to said underlying shell (202) by means of adapted second rivets (214). 20 25 30 35
11. Ski boot according to claim 10, characterized in that an adjustment element, such as a knob (235), protrudes from said tube and is rigidly coupled to said cable (211) at said end contained in said tube. 40
12. Ski boot according to claim 11, characterized in that said at least one flap has, at said cable and said lever, an adapted third seat (230) which can be closed by using an adapted covering flap (231) which is pivoted at said first pivot (226) at one end and is slideable, at the other end, through an adapted seat formed on said bush (225) in the interspace between said inner lateral surface of said at least one flap (206) and said bush. 45 50 55
13. Ski boot according to one or more of the preceding claims, characterized in that a third

seat (230) is formed on said at least one flap (206) in a position adjacent to said second side (209), a base (229) for said lever being arranged at said third seat, said base having, at its longitudinal ends, adapted tabs (233) which surmount said at least one flap (206) at said third seat, so as to both keep said at least one flap adjacent to said outer lateral surface of said shell and allow the sliding of said second side with respect to said shell.

14. Ski boot according to claim 13, characterized in that said base has a shorter longitudinal extension than said third seat.
15. Ski boot according to one or more of the preceding claims, characterized in that adapted fourth seats (334) for pawls (335) are formed at said first side of said at least one flap, said pawls interacting in a ratchet-like manner with an underlying rack (336) provided at one end of a band (337) which is pivoted, at its other end, by means of a first pivot (326), between the wings (327) of a lever (318) which is in turn pivoted, at one end, by means of a second pivot (328), to the wings which protrude from a base (329) which is rigidly coupled to said shell by means of adapted second rivets (314).
16. Ski boot according to claim 15, characterized in that said second side (309) of said at least one flap (306) is associated with said shell (302) by means of adapted third rivets (338) which act in adapted slots (324) formed at said shell.
17. Ski boot according to claim 16, characterized in that said at least one flap (339) has a tab at said third seat in order to protect said band.
18. Ski boot according to one or more of the preceding claims, characterized in that at least one flap (406) is arranged externally at least at the foot instep region, said first side (407) of said flap being slidably associated with said shell (402) by means of adapted first rivets (408) which are rigidly coupled to said shell and act in adapted slots (424) formed transversely to said flap.
19. Ski boot according to claim 18, characterized in that said second side (409) of said flap is rigidly coupled to said shell (402) by means of second rivets (414) proximate to which a base (429) is rigidly coupled to said shell, a lever (418) being pivoted to said base.

20. Ski boot according to claim 19, characterized in that a means, such as a knob (410), for the micrometric takeup of a traction element, such as a cable (411) which passes at a second seat (422) formed on said flap and is locked to said first rivets (408) at one end, is associated with said lever. 5
21. Ski boot, according to claim 1, characterized in that it comprises a shell (502) having at least two overlapping portions (503,504) constituting said first side (504) and said second side (503), a flap (506) having a first end associated with said first side (504) and a second end associated with a lever (527), said lever being connected to a slider (528), said slider being adapted to be selectively positioned on said second side (503) for adjusting the securing of said sides. 10 15 20
22. Ski boot, according to claim 21, characterized in that said second side has a rack (536), said slider (528) having a pawl (535) adapted to engage in a ratchet-like manner said rack. 25
23. Ski boot, according to claim 21, characterized in that said flap (506) embraces said securing means (527,528,535). 30 35 40 45 50 55

