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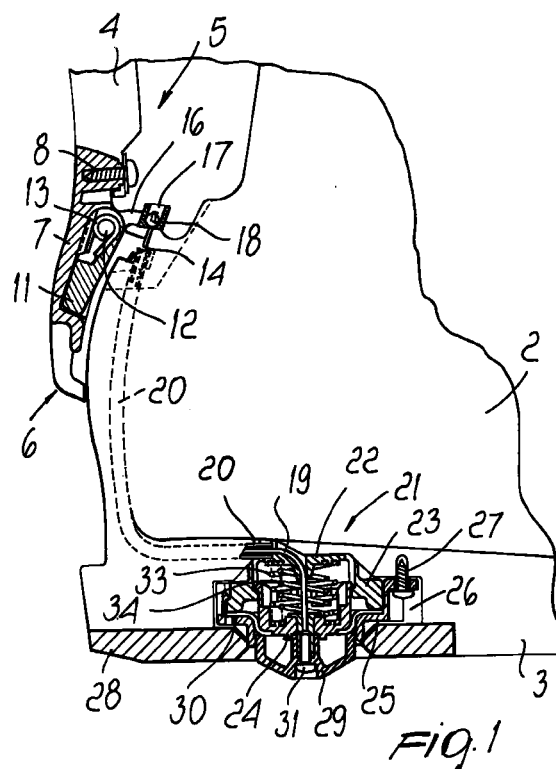
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(54) **Adjuster device for sports shoes**

(57) An adjuster device for adjusting the position of the quarter (4) with respect to the shell (2) of a sports shoe, comprising a locking means (5) for temporarily locking the position of the quarter with respect to the shell, the means being actuated by an actuator (21) which can be actuated by the user's weight.



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Description

[0001] The present invention relates to an adjuster device for adjusting the position of the quarter with respect to the shell of a sports shoe.

[0002] Various devices are currently known which allow some adjustment of the position of a quarter with respect to a shell; FR-72.11273 discloses a device which comprises an actuation element to be fixed to the leg below the ankle and is directly or indirectly coupled to an automatic release system, so that an excessive forward inclination of the user's leg releases the boot from the binding.

[0003] DE-28 08 805 discloses a device for a boot whose purpose is to reduce the risk of breaking a leg during skiing. Said device comprises a mechanism which connects the quarter directly to the heel unit of the binding, allowing to achieve rapid release of the boot if said boot tilts forward excessively. The mechanism also allows to maintain the quarter in a skiing position, limiting its movement. This solution allows to render the actuation independent of the user's will, avoiding possible errors and oversights thereof.

[0004] US-4,379,370 discloses a device for adjusting the inclination of the quarter, particularly in ski boots, which comprises an abutment block which is associated with the rear part of the shell of a ski boot and is adapted to engage the quarter by contact in order to determine the angle, in the inactive position, between the longitudinal axis of the leg with which said quarter is associated and the longitudinal axis of the shell. In particular, the abutment block can be arranged at various heights on the quarter in order to vary the angle. This solution requires actuation by the user, with the possibility of said user forgetting or making mistakes in arranging the block and consequently using the boot incorrectly.

[0005] US-5,136,794 discloses a ski boot which has a mechanism for adjusting the position of the quarter with respect to a shell and in which said mechanism can be actuated simultaneously with the fastening of a lever. Accordingly, this solution, too, requires direct actuation by the user and an equally direct deactivation if the skier wishes to assume a position other than the one for skiing; however, for deactivation the skier must simultaneously loosen the closure of the boot, and this condition is undesirable in case of brief pauses in skiing, such as those due to waiting to access ski-lifts.

[0006] U.S. Patent Application S.N. 08/455,745 discloses a device for adjusting the position of a quarter with respect to the shell of a sports shoe which is characterized in that it comprises first means, associated with the quarter, for preselecting the chosen interaction between the quarter and the shell, second stable or temporary engagement means which are associated with said shell, and third means for interaction between said first preselection means and second engagement means which can be actuated by a movement applied to

said quarter. This solution allows to vary the inclination of the quarter with respect to the shell in three different and preset positions thanks to an actuation lever, which however must be actuated directly by the user. Although this solution is undoubtedly valid, it has been observed that in any case the transition from one position to the other must be actuated directly by the user, with possible considerable discomfort for said user and with the possibility of said user forgetting to change the position, with the consequent risk of using the shoe incorrectly. Furthermore, actuation of the lever can be awkward because the skier usually wears gloves during sports activity.

[0007] Finally, for this last device and for some of the other already-mentioned ones it is noted that the mechanisms used are bulky and entail an increase in the overall weight of the shoe and its less than optimum final aesthetic execution.

[0008] The aim of the present invention is to solve the above-mentioned problems, eliminating the drawbacks of the cited prior art, by providing a device which allows to achieve an optimal and selected adjustment of the position of the quarter with respect to the shell of a sports shoe, achieving the skiing position, in which the backward oscillation of the quarter beyond a preset angle is blocked, or the walking position, in which the quarter can oscillate freely beyond said preset angle, without any direct intervention of the skier on any of the components that constitute the device.

[0009] An important object of the present invention is to provide a device which allows to avoid errors or oversights in arranging the quarter with respect to the shell.

[0010] Another important object of the present invention is to provide a device which is structurally simple and has small bulk and reduced weight.

[0011] Another object of the present invention is to provide a device which is reliable and safe in use, is free from malfunctions caused by ice or snow, and can be manufactured with conventional machines and equipment.

[0012] This aim, these objects and others which will become apparent hereinafter are achieved by a device for adjusting the position of a quarter with respect to the shell of a sports shoe, characterized in that it comprises means for temporarily locking the position of said quarter with respect to said shell, said means being actuated by an actuator which can be actuated by the user's weight.

[0013] Advantageously, said actuator can be arranged at the sole of said shoe.

[0014] Further characteristics and advantages of the present invention will become apparent from the following detailed description of two particular but not exclusive embodiments thereof, illustrated only by way of non-limitative example in the accompanying drawings, wherein:

Fig. 1 is a sectional side view of the device according to the present invention in the condition in which the actuator is not actuated;

Fig. 2 is a view of the device according to the present invention in the condition in which the actuator is actuated;

Fig. 3 is a view, similar to Fig. 1, of another embodiment of the device according to the present invention;

Fig. 4 is a view, similar to Fig. 2, of said second embodiment.

[0015] With reference to the above figures, the reference numeral 1 schematically designates a sports shoe, such as for example a ski boot, which includes a shell 2 which is provided with a sole 3 and with which a quarter 4 is laterally rotatably associated.

[0016] Figs. 1 and 2 illustrate means for temporarily locking the position of the shell with respect to the quarter; said means are generally designated by the reference numeral 5 and are associated with the quarter proximate to its lower perimetric edge 6.

[0017] Said locking means comprise an enclosure 7 which can be accommodated in an adapted seat formed to the rear of the quarter and associated therewith by means of an adapted screw 8.

[0018] The enclosure 7 has, toward the surface that faces the outer lateral surface 9 of the shell 2, a first seat 10 for temporarily accommodating the tip of a tooth 11 which is pivoted transversely, at its other end, to said first seat by means of an adapted first pivot 12.

[0019] The tooth 11 can therefore oscillate from a position in which it is fully contained in the first seat 10 to a position in which it protrudes therefrom, being forced to do so by an adapted first spring 13 which is arranged coaxially to the first pivot 12.

[0020] The free end of the tooth 11 can be arranged at a second step-shaped seat 14 which is formed proximate to the upper perimetric edge 15 in the facing shell 2.

[0021] The tooth 11 has, at the end that is pivoted to the first pivot 12, a tab 16 which protrudes inside the quarter 4 in a region located above the upper perimetric edge 15 of the shell 2; a cup 17 is rigidly coupled to said tab 16 and is adapted to temporarily accommodate a cable termination 18.

[0022] Said cable termination is also connected to an adapted cable 19, which is slideable within an adapted sheath 20 which is associated inside the shell 2 and is adapted to convey the cable 19 at an actuator 21 which is located at the sole 3.

[0023] Said actuator is constituted by a guiding element 22 for the cable 19; said guiding element is perimetrically associated at a substantially cylindrical spacer 23, coaxially to which an axially movable annular element 24 is internally associated and a support 25 is externally associated; the entire assembly can be arranged and rigidly coupled, by means of a second

screw 27, at an adapted third seat 26 formed in the sole 3 at the plate 28, which makes contact with the ground or the snow.

[0024] At said plate 28 there is a further seat for a button 29 which is perimetrically associated with one end of the support 25 in a region located above the annular element 24.

[0025] The button 29 accordingly has an end which protrudes outside the plate 28; the other end interacts with an adapted gasket 30 which is interposed between said button 29, said annular element 24, said support 25 and said spacer 23, as shown in Fig. 1.

[0026] A cable retainer 31 for the cable 19 is associated axially with respect to the button 29 and a mushroom-shaped element 32 is associated coaxially with respect to the cable retainer 31 and is located in an axial seat of the annular element 24.

[0027] The actuator 21 also comprises a second spring 33 and a third spring 34 which are arranged coaxially to each other and are interposed between said annular element 24 and said guiding element 22.

[0028] The illustrated device can therefore be actuated whenever the plate 28 associated with the heel of the boot makes contact with the ground or with any other resting surface and therefore for example at each step during walking and while the boot is inserted at a suitable binding of a ski.

[0029] The weight force applied to the heel region in fact allows a vertical movement of the button 29 which forces the axial movement of the annular element 24 by virtue of the possibility to compress the second spring 33 and the third spring 34, as shown in Fig. 2.

[0030] The arrangement of the button 29 within the seat formed in the plate 28 allows to loosen the cable 19, accordingly allowing, by means of the first spring 13, to force the protrusion of the tooth 11 from the first seat 10.

[0031] By combining this action with the forward rotation of the quarter, allowed for example when engaged with the binding and therefore when preparing for the skiing position, the free end of the tooth 11 is arranged, as shown in Fig. 2, at the second seat 14 formed in the shell 2; in this condition, the backward movement of the quarter is blocked, accordingly achieving a skiing condition.

[0032] The disengagement of the boot from the ski binding or its lifting from the ground or from the corresponding resting surface causes the initial return of the button 29 to the surface due to the force applied by the third spring 34 and by the second spring 33, whose elastic contact is greater than that of the first spring 13.

[0033] This accordingly produces a tensioning of the cable 19 which, by means of the cup 17 and the tab 16, forces the repositioning of the tooth 11 at the first seat 10 formed in the quarter.

[0034] The walking condition, in which the backward rotation of the quarter is free, is thus reestablished.

[0035] Moreover, during walking the quarter 3 is in a more vertical position than the one normally used during skiing, and therefore the continuous actuation and deactivation of the device due to the resting of the heel on the ground does not entail the locking of the quarter, because the tooth 11 is located too low to be able to interact with the second seat 14 formed in the shell 2, due to the fact that the leg is extended forward during this phase of walking.

[0036] Accordingly, the engagement of the tooth 11 with the second seat 14, in order to achieve the skiing condition, can be achieved only after the forward rotation of the quarter in addition to the simultaneous activation of the button 29.

[0037] It has thus been observed that the invention has achieved the intended aim and objects, a device having been obtained which ensures the arrangement of the quarter in the skiing position whenever the boot is associated with the binding, without the skier having to perform any intervention on the individual components of the device.

[0038] Likewise, the skier can pass to the walking condition simply by lifting the boot from the binding.

[0039] The device therefore allows to avoid errors or oversights in positioning the quarter with respect to the shell, automatically achieving an arrangement of the quarter with respect to the shell which allows skiing or walking.

[0040] The device according to the present invention is susceptible of numerous modifications and variations, within the scope of the appended claims.

[0041] Thus, for example, figs. 3 and 4 illustrate another embodiment, in which the means 105 are associated at the shell 102 proximate to its upper perimetric edge 115.

[0042] In this case, the sheath 120 and the end part of the cable 119 slide within an adapted enclosure 107 which is rigidly coupled at said upper perimetric edge 115 of the shell 102 and is then blocked outside said enclosure at a cable termination 118.

[0043] Said termination is accommodated at a tooth 111 whose free end is directed away from the plate 128 associated with the sole 103; at the opposite end, the tooth 111 is pivoted transversely to the enclosure 107 by means of an adapted first pivot 112.

[0044] A first spring 113 is also present coaxially to said pivot and is adapted to force the protrusion of the free end of the tooth 111 from an adapted first seat 110 formed in said enclosure 107.

[0045] A second step-shaped seat 114 is formed at the inner lateral surface 135 of the quarter 104, and the free end of the tooth 111 can interact by abutment therewith in the skiing condition, shown in Fig. 4.

[0046] The operation of the device can be deduced from the above described solution, since the actuation or lack of actuation of the button 129 entails the release or lack of release of the cable 119 and therefore allows or disallows the first spring 113 to force the free end of

the tooth 111 toward the facing inner lateral surface 135 of the quarter 104 until it is arranged, in the skiing condition and therefore with the quarter rotated forwards, at the second seat 114.

[0047] Obviously, the inclination of the quarter with respect to the shell is of course preset during design, so as to ensure that the user has an anatomically correct skiing position.

[0048] In this case also, the actuation of the device is in any case independent of the will of the user, avoiding incorrect actuations or accidental oversights.

[0049] The dimensions and the materials that constitute the individual components of the device may of course also be the most pertinent according to specific requirements.

[0050] The disclosures in Italian Patent Application No. TV99A000011 from which this application claims priority are incorporated herein by reference.

[0051] 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 interpretation of each element identified by way of example by such reference signs.

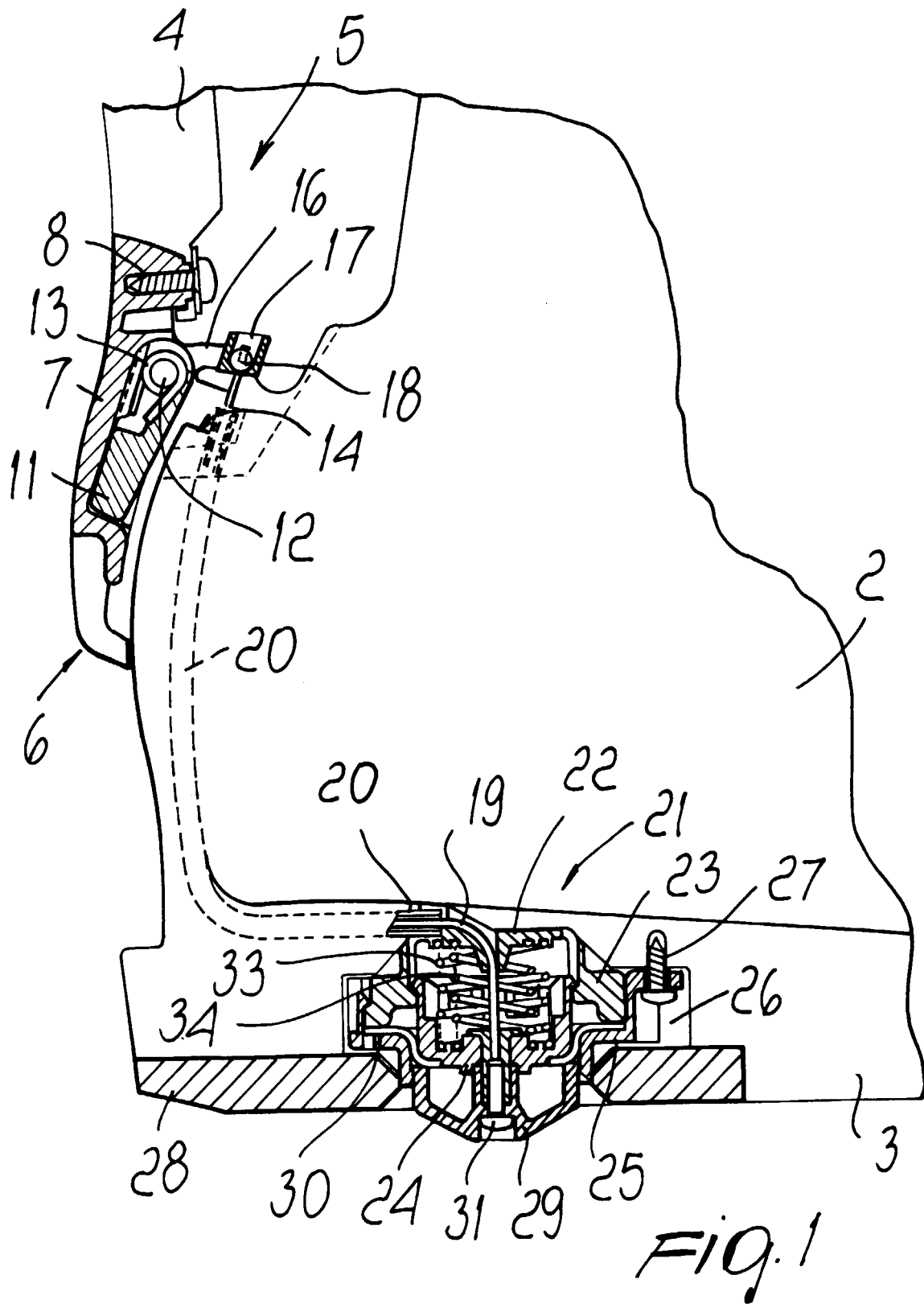
Claims

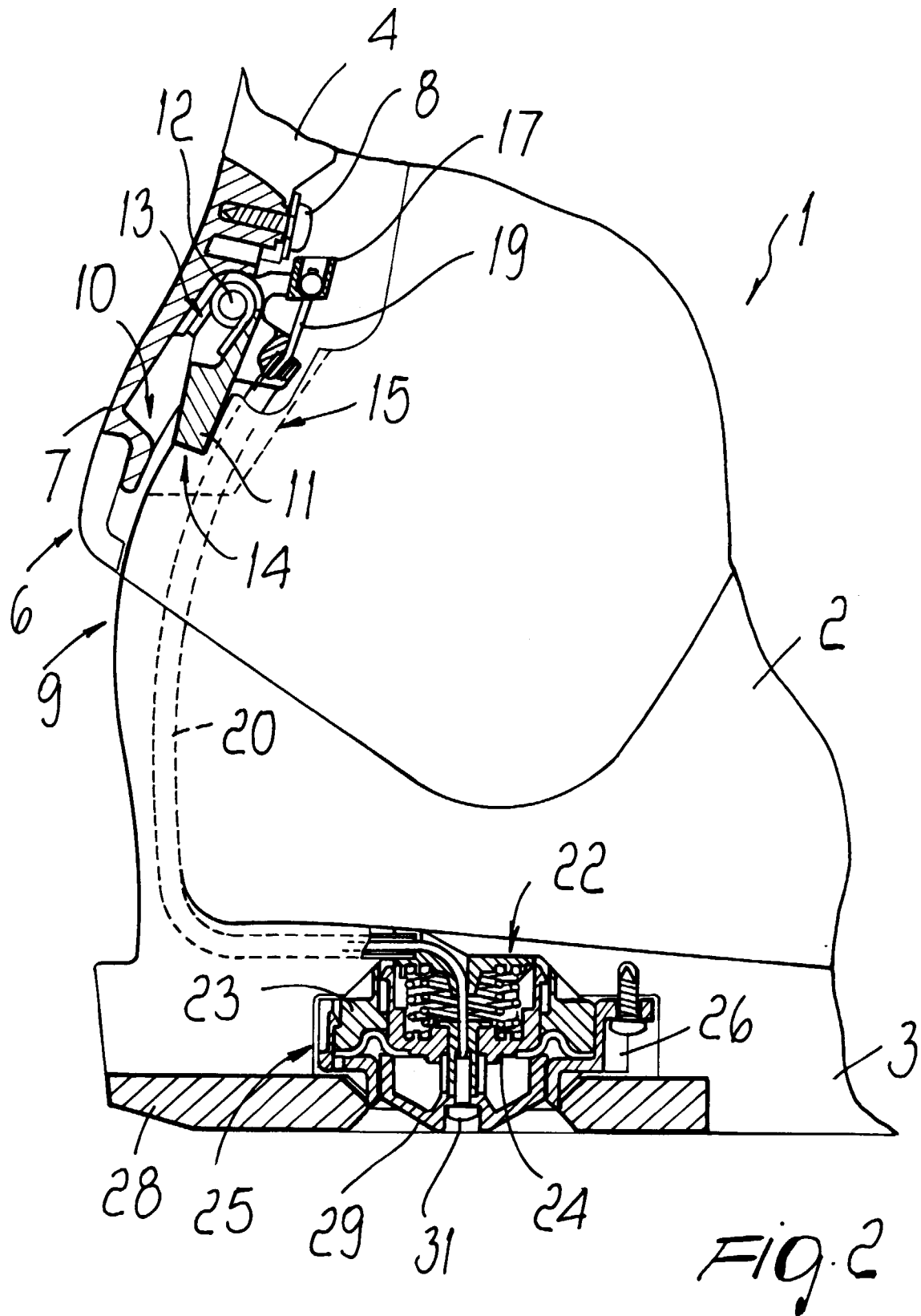
1. An adjuster device for sports shoes comprising at least one quarter connected to a shell, said device being adapted to adjust the position of said quarter with respect to said shell, characterized in that it comprises a locking means for temporarily locking the position of said quarter with respect to said shell, said means being actuated by an actuator which can be actuated by the user's weight.
2. The device according to claim 1, characterized in that said actuator is arranged at the sole of said shoe.
3. The device according to claim 1, characterized in that said shell is provided with a sole, and said quarter is laterally and rotatably associated with said shell, characterized in that said locking means is associated with said quarter, proximate to its lower perimetric edge, or with said shell, proximate to its upper perimetric edge.
4. The device according to claim 3, characterized in that said locking means is associated with said quarter and comprises an enclosure which can be accommodated in an adapted seat formed to the rear of said quarter and associated therewith by means of an adapted screw.
5. The device according to claim 4, characterized in that said enclosure has, toward the surface that

faces the outer lateral surface of said shell, a first seat for the temporary arrangement of the tip of a tooth which is pivoted, at its other end, transversely to said first seat by means of an adapted first pivot.

6. The device according to claim 5, characterized in that said tooth oscillates from a position in which it is fully contained in said first seat to a position in which it protrudes therefrom, being forced to do so by an adapted first spring which is arranged coaxially to said first pivot. 5
7. The device according to claim 6, characterized in that the free end of said tooth is arranged at a second seat which is step-shaped and is formed proximate to said upper perimetric edge of said facing shell. 10
8. The device according to claim 7, characterized in that said tooth has, at the end that is pivoted to said first pivot, a tab which protrudes inside said quarter in a region located above said upper perimetric edge of said shell, a cup being rigidly coupled to said tab and being adapted to temporarily accommodate a cable termination. 15
9. The device according to claim 8, characterized in that said cable termination is connected to an adapted cable which is slideable within an adapted sheath which is associated internally with respect to said shell and is adapted to convey said cable at an actuator located at said sole. 20
10. The device according to claim 9, characterized in that said actuator is constituted by a guiding element for said cable which is perimetrically associated at a substantially cylindrical spacer, coaxially to which an axially movable annular element is internally associated and a support is externally associated, the entire assembly being arrangeable and rigidly associable, by means of a second screw, at an adapted third seat formed in said sole at the plate that makes contact with the ground or with the snow. 25
11. The device according to claim 10, characterized in that at said plate there is an additional seat for a button which is perimetrically associated with one end of said support in a region located above said annular element. 30
12. The device according to claim 11, characterized in that said button has an end which is fixed to protrude externally with respect to said plate, the other end interacting with an adapted gasket which is interposed between said button, said annular element, said support and said spacer. 35

13. The device according to claim 12, characterized in that a cable retainer for said cable is axially associated with said button, a mushroom-shaped element being associated coaxially with respect to said cable retainer and being located in an axial seat of said annular element. 40
14. The device according to claim 13, characterized in that said actuator comprises a second spring and a third spring which are arranged coaxially to each other and are interposed between said annular element and said guiding element. 45
15. The device according to one or more of the preceding claims, characterized in that said locking means is associated at said shell proximate to its upper perimetric edge and comprises a sheath for a cable having an end portion sliding within an adapted enclosure which is rigidly coupled at said upper perimetric edge of said shell and is then locked externally with respect to said enclosure at a cable termination. 50
16. The device according to claim 15, characterized in that said cable termination is accommodated at a tooth whose free end is directed away from said plate associated with said sole, said tooth being pivoted, at the opposite end, transversely to said enclosure by means of an adapted first pivot. 55
17. The device according to claim 16, characterized in that a first spring adapted to force the protrusion of the free end of said tooth from an adapted first seat formed in said enclosure is provided coaxially to said first pivot.
18. The device according to claim 17, characterized in that a second step-shaped seat is formed at the inner lateral surface of said quarter and the free end of said tooth can abut against said seat in the skiing condition.





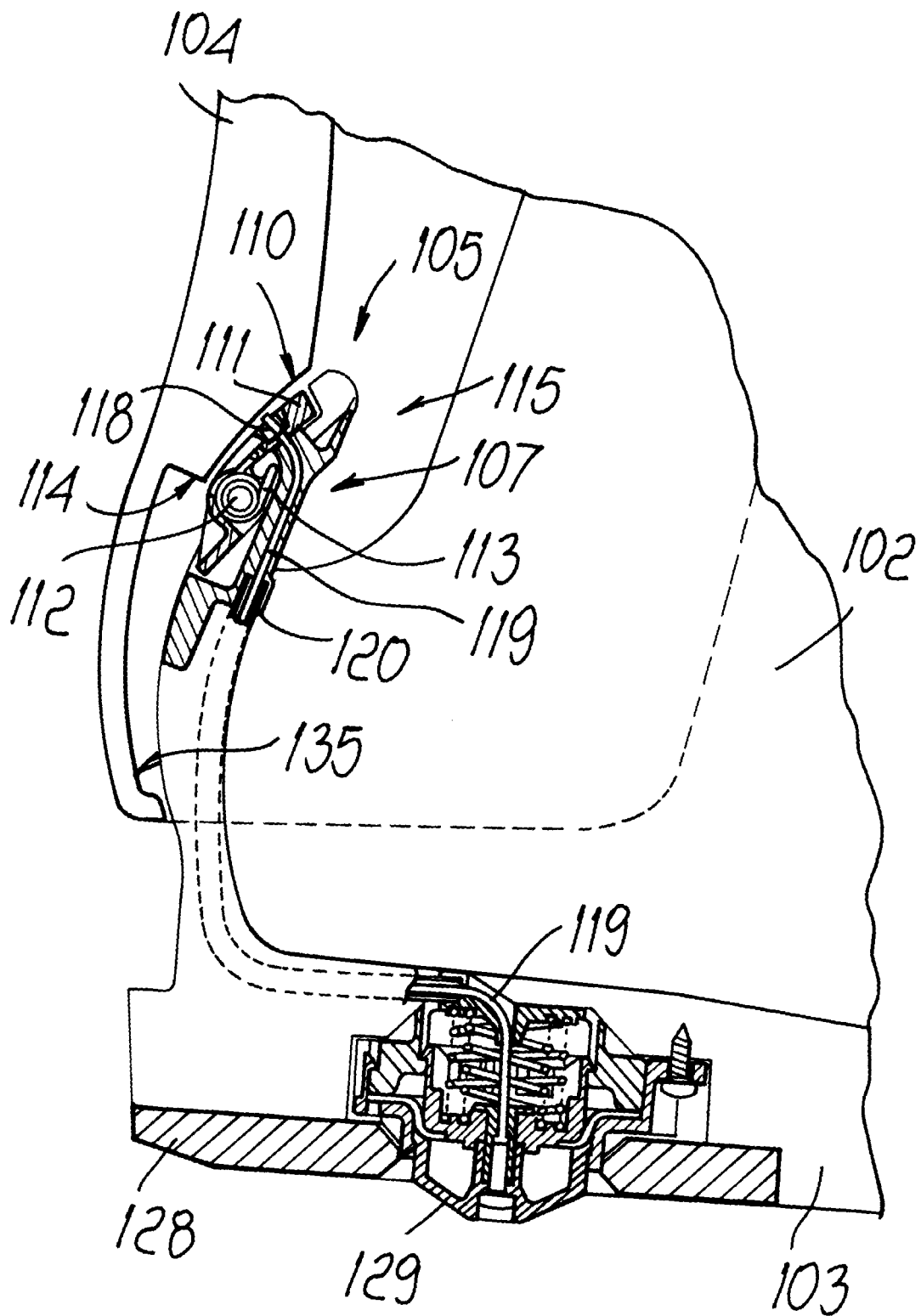


Fig. 3

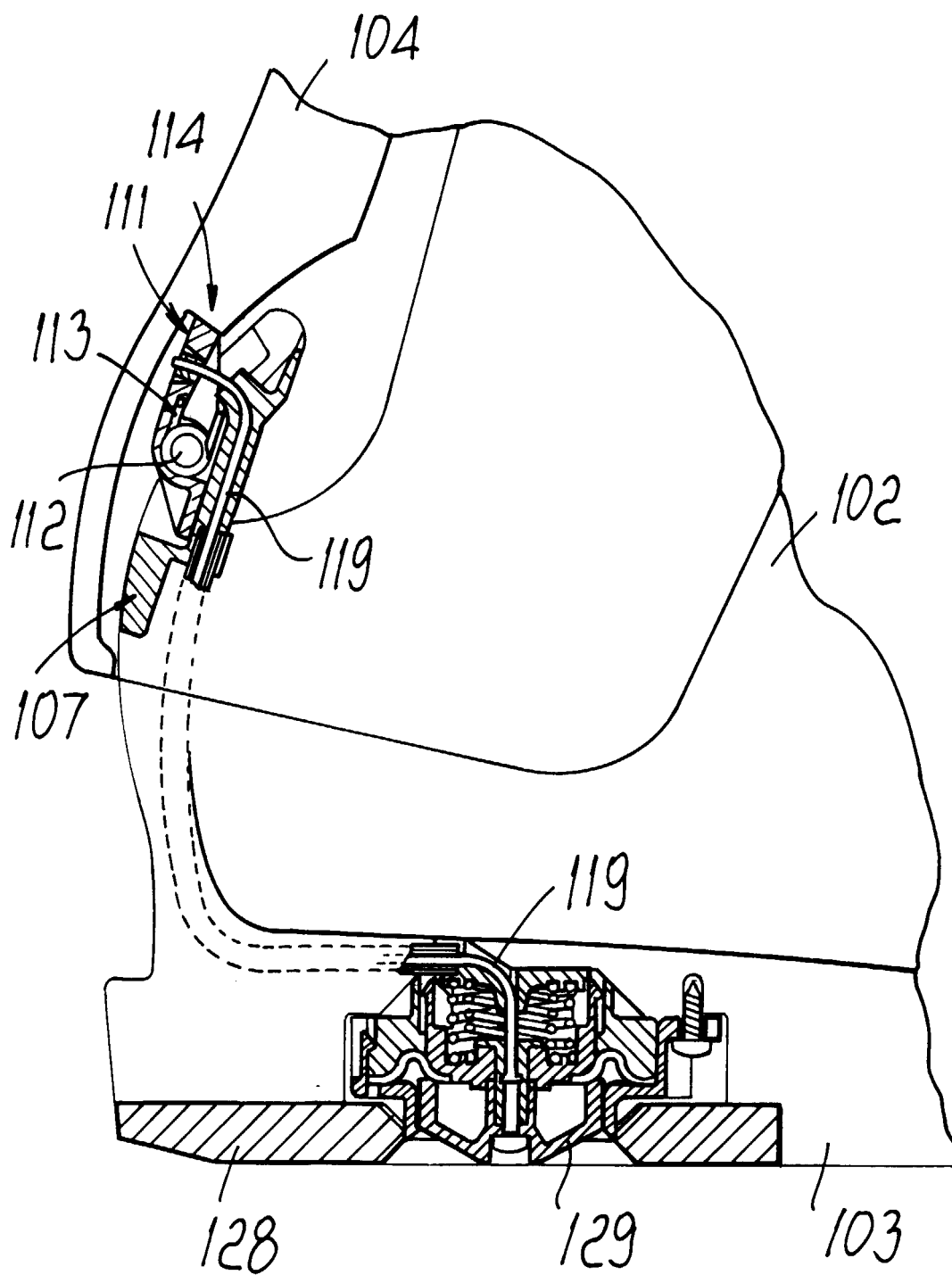


Fig. 4