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(54) Device for adjusting the position of the bootleg with respect to the shell, particularly for ski boots

(57) A device for adjusting the position of the bootleg with respect to the shell, particularly for ski boots, comprising a rigid blade (6) which has a first end (7) which is rotatably associated internally and at the rear with the bootleg (4) in contrast to a first elastically deformable element (8).

The blade (6) has a second end (14) which can temporarily be positioned slidably and freely in a seat (20) which is provided on a slider (23) which is arranged adjacent to the heel (11) and is movable axially with respect to the shell (2) in contrast to a second elastically deformable element (32) which can be compressed by a heelpiece (24) of a ski binding (25) in the closed condition.

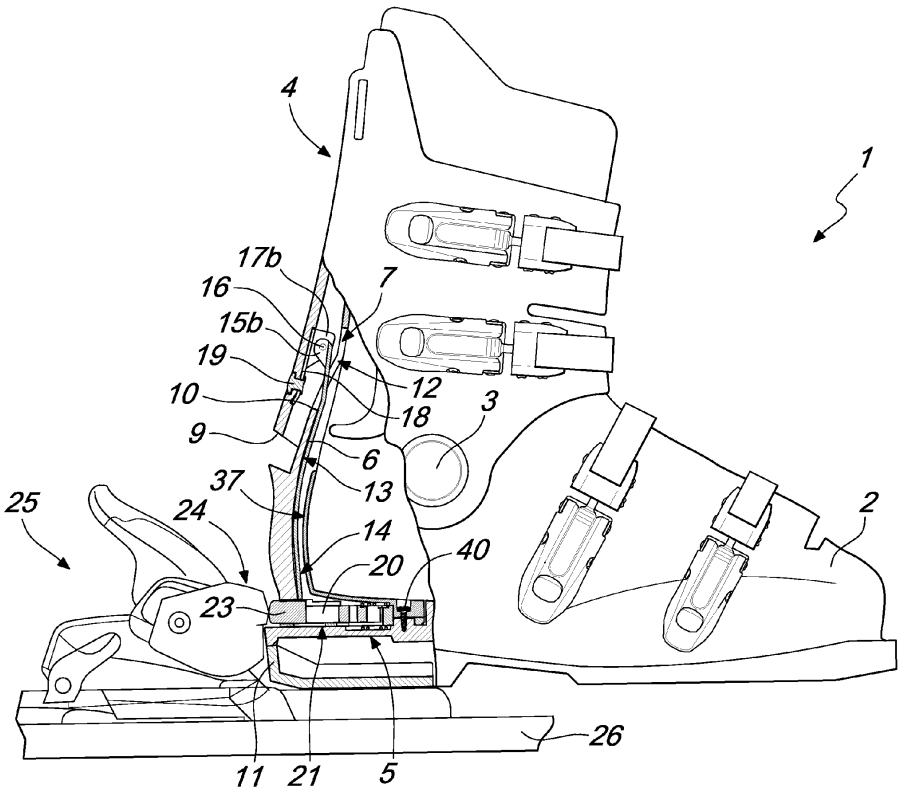


Fig. 1

EP 2 710 911 A1

Description

[0001] The present application relates to a device for adjusting the position of the bootleg with respect to the shell, particularly for ski boots.

[0002] In conventional ski boots the problem is widely felt of being able to have a limited backward oscillation of the bootleg or quarter during sporting practice and at the same time a free oscillation of the same bootleg once sporting practice is finished in order to have an optimal gait for the user.

[0003] Thus US 4,519,150 is known, which discloses a ski boot composed of a shell to which a bootleg is articulated, a lever being associated with the rear of such bootleg, the actuation of such lever enabling the activation of a bar which has a threaded end which interacts with a complementary threaded bushing which can be positioned on an adapted abutment coupled to the shell.

[0004] Such solution makes it possible to vary the flexibility of the bootleg with respect to the shell so as to be able for example to set the optimal position of the latter during the ski run.

[0005] Such solution however has drawbacks in that manual intervention is necessarily required for its activation by the user, but it does not make it possible to have an optimal gait since the bootleg cannot oscillate freely with respect to the shell even with the device deactivated.

[0006] Other devices are also known, including some that include, for example, the presence, at the quarter, of adapted elements, which can be activated for example by way of adapted levers, to be gripped by the user, which can be selectively positioned so as to allow the free oscillation of the bootleg or limit the oscillation thereof, for their interaction with adapted projections which protrude at and outward from the shell: such protrusion constitutes a further drawback, however, given the fact that it fills out the aesthetic shape of the boot in addition to increasing its weight.

[0007] Furthermore, the activation of conventional devices is not always easy, due to the fact that the skier is usually wearing gloves and thus finds it difficult to grip levers and other devices especially in conditions of low temperatures.

[0008] Such conventional devices are very often not activated because the skier forgets about them or, not perceiving their correct operation, activates them incorrectly.

[0009] Also known is EP 0940096 which discloses a device for adjusting the position of the bootleg with respect to the shell, particularly for ski boots, which is constituted by at least one lever, composed of a first and a second arm, which are mutually rotatably associated at one end by way of an adapted first pivot which is arranged transversely and at the rear of the shell.

[0010] The first arm is positioned in a region that lies above the heel of the shell. The lever has a first end which interacts with a binding, which is coupled to a ski, in contrast to at least one first elastically deformable element, and a second end which selectively interacts, in abutment or otherwise, with the bootleg.

[0011] Although such solution is undoubtedly valid, it has a drawback which is due to the fact that the bootleg and the shell have, in the region where the device is arranged, a protrusion that increases the size of the boot thus filling out its overall shape.

[0012] Furthermore there is a complication in construction, although limited, both in the provision of the mold and in the assembly of individual pieces which require a certain degree of care in assembly.

[0013] Finally in such solution it is possible for snow to become deposited and ice to form between the first arm 7 and the first seat 16 in which the first spring 15 is accommodated, making the activation of the device more difficult.

[0014] Also known are the patents EP0085026, EP0521283, EP0582803, EP0664969 and FR2647649 which all have a high level of structural complexity and considerable encumbrances, in addition to the need for manual activation by the user.

[0015] Also known is the EP0664969 patent which, although it allows activation when the boot is coupled to the ski binding, still has a high rear encumbrance of the bootleg, which moreover extends below almost to the sole, as well as a high structural complexity and an operation that requires high precision in order to set for example the optimal interaction between the appendage 19 and the seats 17 and 18, where tilting can occur which hinders operation.

[0016] Also known is EPA 12151361.8 which discloses a device for adjusting the position of the bootleg 4 with respect to the shell 2, particularly for ski boots 1, **characterized in that** internally and at the rear of such bootleg 4 the first end 7 of a blade 6 is associated with the second end 13 which interacts selectively with a tooth 16 of a slider 17, which is arranged adjacent to the heel 11 and is movable axially with respect to the shell 2 in contrast to an elastically deformable element 29.

[0017] Such solution, although solving the above-mentioned drawbacks, nevertheless has other drawbacks. Since the first end of the blade is locked in its position to the bootleg 4, with a rivet and with its partial folding and the interpenetration thereof in the thickness of the bootleg 4 itself, the blade 6 must necessarily be flexible in order to allow the bootleg, in the condition in which the second end is not engaged with the tooth, to bend forward even if the slider is activated and thus in the condition in which the sole is interacting with the heelpiece.

[0018] Such necessary structural condition for the blade, and thus its indispensable flexibility, is a drawback when, while skiing, the user causes the weight to bear on the bootleg: when this happens, because of the flexibility of the blade, the bootleg rotates partially backward, thus taking away sensitivity of control of the ski from the user.

[0019] Furthermore, the use of the tooth and its interaction with the second end of the blade determine an

additional drawback: in addition to the increased structural complexity of the device, in order to prevent jamming it is necessary to create a slot, a temporary seat for the tooth, which is bigger than the tooth itself, thus leading to the creation of levels of play which again limit the sensitivity and control of the ski by the user.

[0020] The aim of the present invention is thus to solve the above-mentioned drawbacks, and thus to solve the above-mentioned technical problems by devising a device that enables the user to set the free oscillation of the quarter for walking or a limitation of such oscillation in order to be able to ski, the whole having a shape that is structurally simple and contained in size and maintaining an excellent sensitivity and control of the ski by the user.

[0021] Within this aim, an object of the invention is to enable the skier to set such two different conditions for the oscillation of the quarter with respect to the shell automatically and thus without having to operate directly on adapted devices applied at the boot and irrespectively of the possible presence of snow or ice on the boot.

[0022] Another object of the invention is to provide a device that in addition to the foregoing characteristics also adds that of being low-cost thus enabling an abatement of the overall costs, including a reduction in the provision of molds and for mounting the device on the boot.

[0023] Another object of the invention is to provide a device the activation of which, when skiing, and the deactivation of which, when walking, can be achieved with no direct intervention of the skier on the boot.

[0024] This aim and these and other objects which will become more apparent hereinafter are achieved by a device for adjusting the position of the bootleg 4 with respect to the shell 2, particularly for ski boots 1, **characterized in that** it comprises a rigid blade 6 which has a first end 7 which is rotatably associated internally and at the rear with said bootleg 4 in contrast to a first elastically deformable element 8, and a second end 14 which can be slideably and freely positioned temporarily in a seat 20 which is provided on a slider 23 which is arranged adjacent to the heel 11 and is movable axially with respect to said shell 2 in contrast to a second elastically deformable element 32 which can be compressed by a heelpiece 24 of a ski binding 25 in the closed condition.

[0025] Further characteristics and advantages of the invention will become more apparent from the detailed description of a particular, but not exclusive, embodiment, illustrated by way of non-limiting example in the accompanying drawings wherein:

Figure 1 is a partially sectional view of a boot with a device according to the invention in the condition that allows skiing;
Figure 2 is a detail of the previous figure;
Figure 3 is a rear view of the boot;
Figure 4 is a three-quarters view of the slider;
Figure 5 is a view from above of the slider;
Figure 6 is a partially sectional view of the boot with the device in the condition that allows walking;
Figure 7 is a view from below of the slider;
Figure 8 is a three-quarters view from the side of the blade;
Figure 9 is a sectional view of the blade at the rotatable interconnection at a plate which can be coupled to the bootleg.

[0026] In the embodiments illustrated, individual characteristics shown in relation to specific examples may in reality be interchanged with other, different characteristics, existing in other embodiments.

[0027] Moreover, it should be noted that anything found to be already known during the patenting process is understood not to be claimed and to be the subject of a disclaimer.

[0028] With reference to the figures, and considering that they are indicative of some particular embodiments and are variable in scale and that in them individual reference numerals correspond to elements that are identical or equivalent, the reference numeral 1 generally designates a ski boot which is constituted by a shell 2 to which, by way of adapted bosses 3, a quarter or bootleg 4 is articulated.

[0029] The reference numeral 5 generally designates a device for adjusting the position of the bootleg 4 with respect to the shell 2, such device being constituted by a rigid blade 6 that has a first end 7 rotatably associated internally and at the rear with the bootleg 4 in contrast to a first elastically deformable element 8.

[0030] The blade 6 has a curved shape that is such as to arrange the first end 7 in a region that is adjacent to the lower perimetric edge 9 of the bootleg 4 in a region that lies above the inner lateral edge 10 of the shell 2.

[0031] Such blade 6 is directed toward the underlying heel 11 of the boot and is thus caused to pass through an adapted opening 12 defined in the shell 2 and then is curved in order to be arranged adjacent to the curved inner side surface 13 of the shell 2 and terminates in a second end 14.

[0032] From the perimetric edges of the first end 7, in the direction of the bootleg 4, a pair of tabs 15a and 15b protrudes transversely to which, along a same axis, a seat for a pivot 16 is provided which is adapted to allow the rotatable connection of the blade 6 to a pair of shoulders 17a and 17b which protrude laterally to a plate 18 which is rendered integral with the bootleg 4 by way of an adapted rivet 19.

[0033] Placed coaxially with the pivot 16 is the first elastically deformable element 8, such as a spring, the function of which is to force the second end 14 of the blade 6 adjacent to the inner side surface 13 of the shell 2.

[0034] The second end 14 extends until it affects a seat 20 which is obtained substantially at a central region of a slider 23 which is associated slidably and axially with a box-like body 21, which constitutes the adjustment device 5.

[0035] The box-like body 21 is embedded in or asso-

ciated with the lower end of the shell in a region that is adjacent to the flat surface 22 of the heel 11.

[0036] Given the movement that can be imposed on the slider 23, the seat 20 can be arranged, with respect to the overlying blade 6, in an active condition, shown in Figure 6, in which it allows the entry therein of the blade 6 and in a passive condition, shown in Figure 2, in which it does not allow the entry therein of the blade 6, which thus abuts on the slider 23 and thus does not allow the backward inclination of the bootleg 4.

[0037] The slider 23 has, in a transverse cross-section, the shape of an inverted T the stem 27 of which slides within the seat 20 and the arms 28a and 28b of which slide within complementary guides 29a and 29b which are provided at the sides of the box-like body 21.

[0038] The slider 23 moreover has a shape that bears a first end 30 thereof, outside the box-like body 21, to interact with a jaw 24 of a binding or heelpiece 25 which is coupled to the top of a ski 26.

[0039] On the other hand, the second end 31, within the box-like body 21, of the slider 23 works in contrast to a second elastically deformable element 32, such as a helical cylindrical compression spring, the function of which is to force the slider 23 toward the outside of the shell 2.

[0040] There is a stroke limit 33 for the slider 23 which is constituted by a pin protruding from the lower surface 34 of the slider 23 at the second end 31: such pin operates, forced by the second elastically deformable element 32, at a seat 35 which is formed on the lower surface 36 of the box-like body 21.

[0041] There is a buttress 37 arranged inside the shell 2 and provided with a rear surface 38 directed toward the blade 6 and a lower surface 39 arranged above the box-like body 21 and associated with the shell 2 by way of a screw 40.

[0042] One or more sealing gaskets can also be present, arranged for example between the buttress 37 and the shell 2.

[0043] Operation of the device according to the invention is as follows: in the skiing condition, which is the condition shown in Figure 1, the jaw 24 forces the slider 23 to slide within the box-like body 21 so that the seat 20 is no longer below the second end 14 of the blade 6 which thus, since it is standing on the slider 23 and is rigid, if the skier bends the bootleg 4 backward, does not allow the inclination of the bootleg backward but only forward, thanks to its articulation to the plate 18.

[0044] When the skier disconnects the boot from the binding 25, the second compressible element 32 pushes the slider 23 outward until the seat 20 is repositioned below the second end 14 of the blade 6 which thus, if the skier bends the bootleg 4 backward, can slide within the seat 20 to allow the backward inclination of the bootleg typical of walking.

[0045] Starting from this condition, once the binding 25 is fitted again as shown in Figure 6, upon the first forward bending of the skier the blade 6 will be lifted and will exit from the seat 20 thus enabling the slider 23 to move forward and be repositioned as in Figure 1.

[0046] In practice it has been found that the invention has fully achieved the intended aim and objects, a device having been obtained which enables the user to have the free oscillation of the bootleg for walking or a limitation of such oscillation in order to be able to ski, the whole having a shape that is structurally simple and contained in size and maintaining an excellent sensitivity and control of the ski by the user during the ski run given the rigidity of the blade and its rotatable articulation to the bootleg.

[0047] Moreover the skier can set such two different conditions for oscillation of the bootleg with respect to the shell automatically upon engagement and disengagement of the binding even in the presence of snow or ice on the boot.

[0048] The device has moreover a low number of components which makes it possible to achieve simplicity of construction.

[0049] Naturally the materials used as well as the dimensions of the individual components of the invention may be more pertinent to specific requirements.

[0050] The various means of achieving certain different functions certainly need not coexist only in the embodiment shown, but may be present in many embodiments, even if they are not shown.

[0051] The characteristics indicated above as advantageous, convenient or similar, may also be missing or be substituted by equivalent characteristics.

[0052] The disclosures in Italian Utility Model Application No. TV2012U000039 from which this application claims priority are incorporated herein by reference.

[0053] 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. A device for adjusting the position of the bootleg (4) with respect to the shell (2), particularly for ski boots (1), **characterized in that** it comprises a rigid blade (6) which has a first end (7) which is rotatably associated internally and at the rear with said bootleg 4 in contrast to a first elastically deformable element (8), and a second end (14) which can temporarily be positioned slidably and freely in a seat (20) which is provided on a slider (23) which is arranged adjacent to the heel (11) and is movable axially with respect to said shell (2) in contrast to a second elastically deformable element (32) which can be compressed by a heelpiece (24) of a ski binding (25) in the closed condition.

2. The device according to claim 1, wherein said rigid blade (6) has a curved shape that is such as to arrange said first end (7) in a region that is adjacent to the lower perimetric edge (9) of said bootleg (4) in a region that lies above the inner lateral edge (10) of said shell (2) and wherein said blade (6) is directed toward said, underlying, heel (11), passing through an opening (12) which is provided in said shell (2) and thus is curved in order to be arranged adjacent to the curved inner side surface (13) of said shell (2), terminating in a second end (14), **characterized in that** protruding from the perimetric edges of said first end (7), in the direction of said bootleg (4), is a pair of tabs (15a, 15b), transversely to which, along a same axis, a seat for a pivot (16) is provided which is adapted to allow the rotatable connection of said blade (6) to a pair of shoulders (17a, 17b) which protrude laterally to a plate (18) which is rendered integral with said bootleg (4) by way of an adapted rivet (19).

3. The device according to claims 1 and 2, **characterized in that** placed coaxially with said pivot (16) is a first elastically deformable element (8), which is adapted to force said second end (14) of said blade (6) adjacent to the inner side surface (13) of said shell (2).

4. The device according to claims 1 and 3, **characterized in that** said second end (14), which extends until it is adjacent to said slider (23), can temporarily be arranged slidably and freely within said seat (20) which is obtained substantially at a central region of said slider (23) which is associated slidably and axially to a box-like body (21) that is embedded in or associated with the lower end of said shell in a region that is adjacent to the flat surface (22) of said heel (11).

5. The device according to one or more of the preceding claims, wherein said slider (23) has, in a transverse cross-section, the shape of an inverted T the stem (27) of which slides within said seat (20) and the arms (28a, 28b) of which slide within complementarily shaped guides (29a, 29b) which are provided at the sides of said box-like body (21), said slider (23) having a shape that bears a first end (30) thereof, outside said box-like body (21), to interact with a jaw (24) of a binding or heelpiece (25) which is coupled to the top of a ski (26), **characterized in that** the movement that can be imposed on said slider (23) by way of said jaw (24) modifies the position of said seat (20) which can thus be arranged, with respect to said overlying blade (6), in an active condition in which it allows the entry therein of said blade (6) and in a passive condition in which it does not allow the entry therein of said blade (6), which thus abuts on said slider (23) and blocks the backward inclination of said bootleg (4).

6. The device according to one or more of the preceding claims, wherein said slider (23) has a second end (31), within said box-like body (21), which interacts in contrast with a second elastically deformable element (32), such as a helical cylindrical compression spring that is adapted to force said slider (23) toward the outside of said shell (2), **characterized in that** said slider (23) has a stroke limit (33) constituted by a pin protruding from the lower surface (34) of said slider (23) at said second end (31), said pin, forced by said second elastically deformable element (32), operating at a seat (35) formed on the lower surface (36) of said box-like body (21).

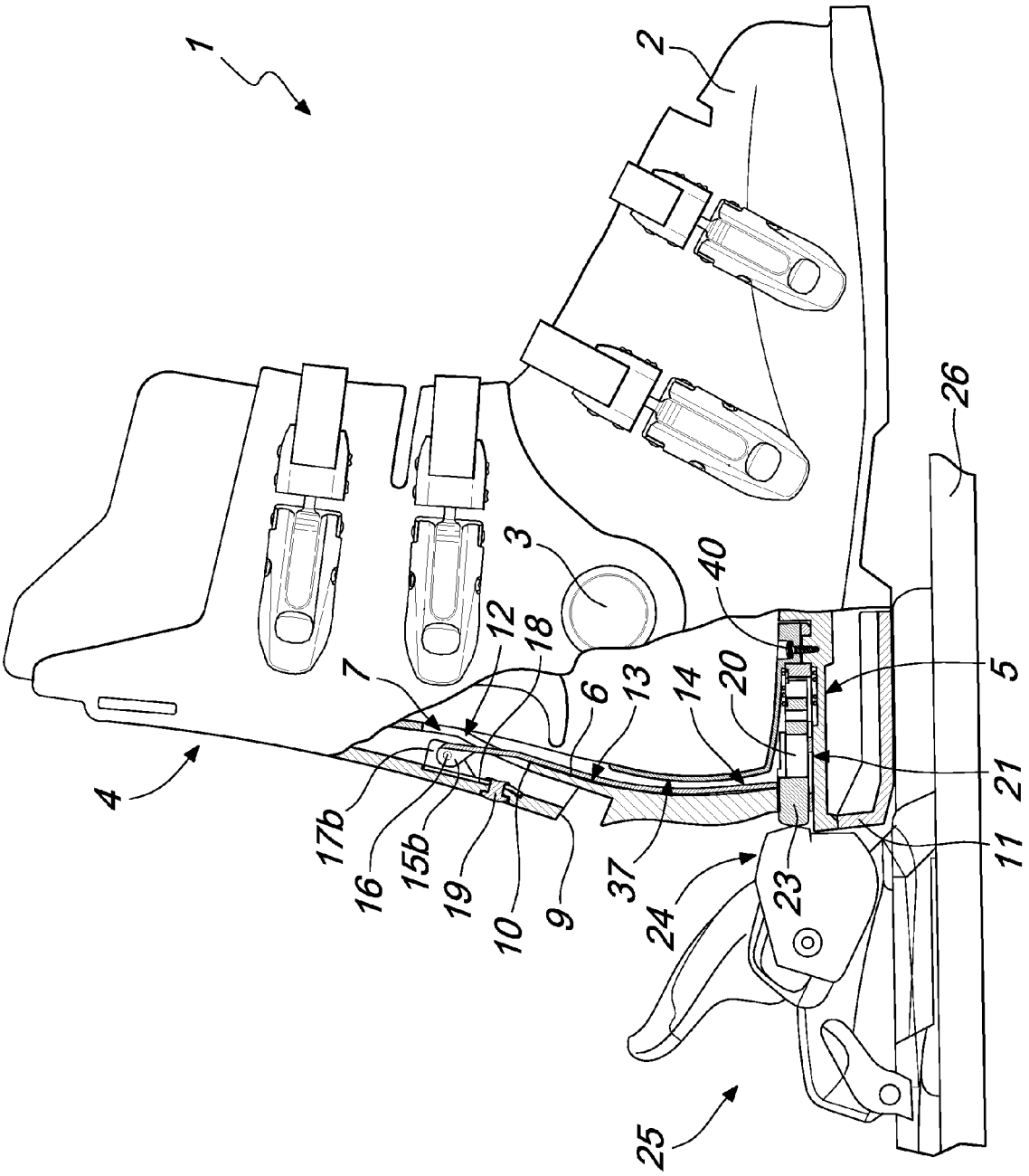


Fig. 1

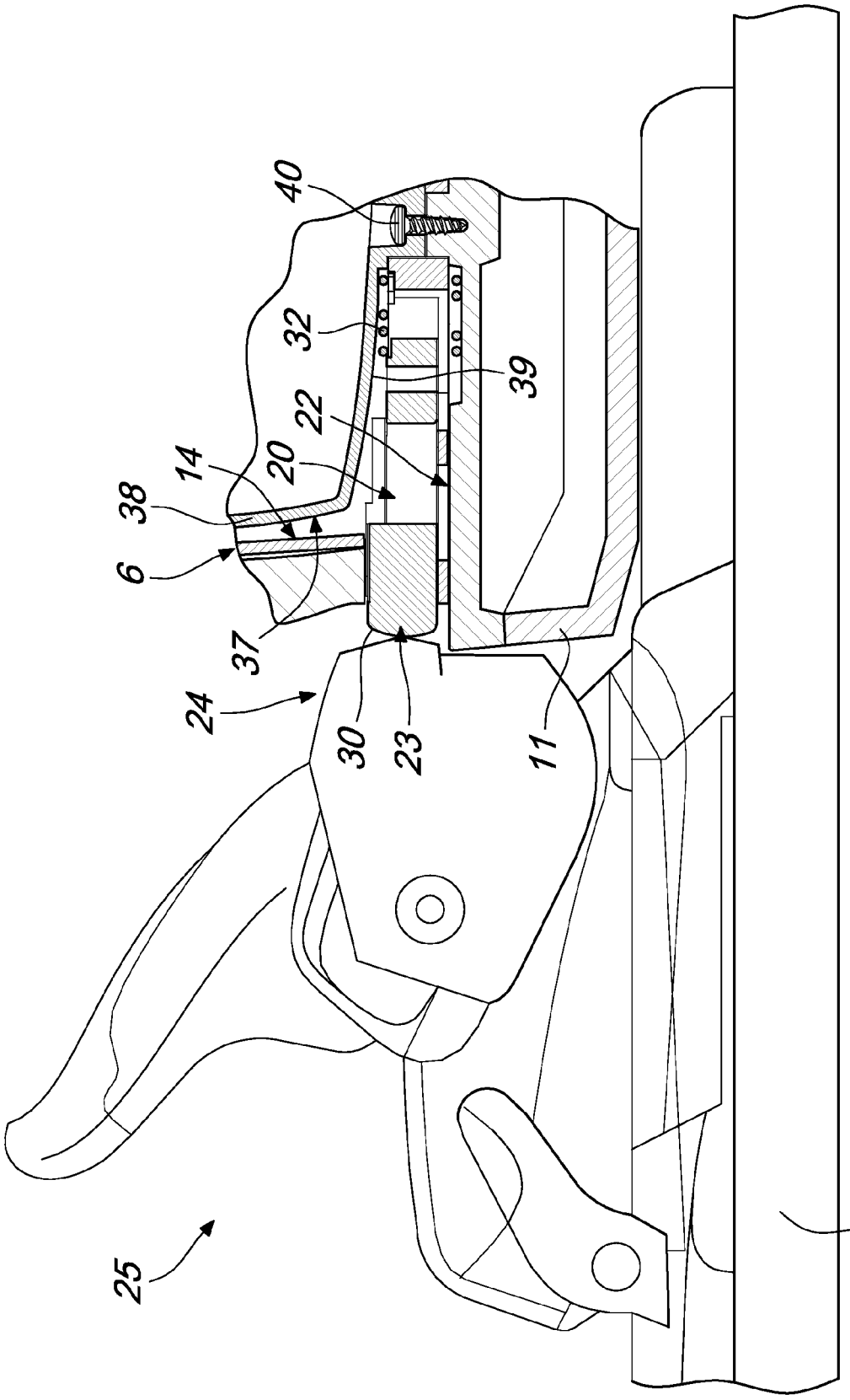


Fig. 2

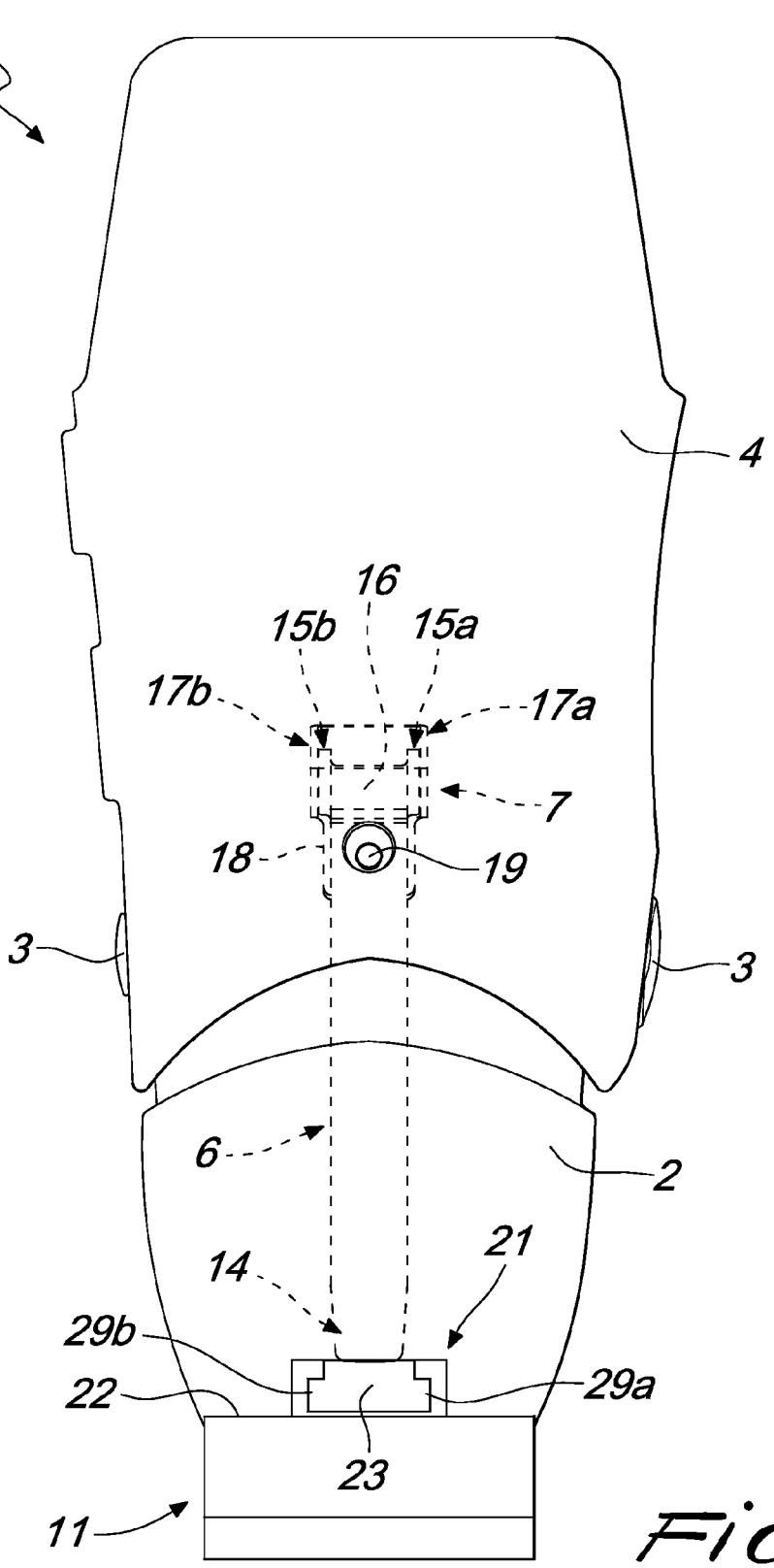


Fig. 3

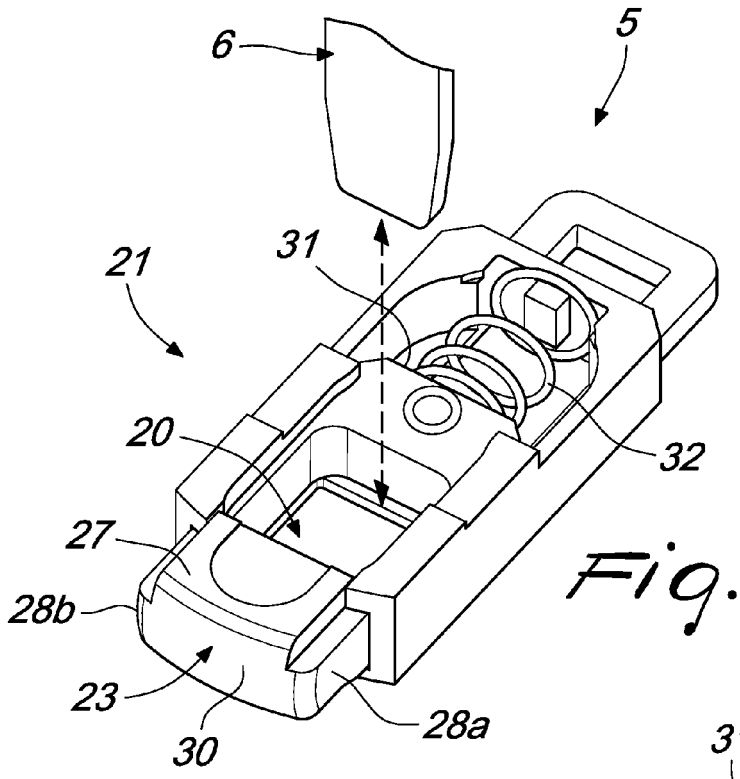


Fig. 4

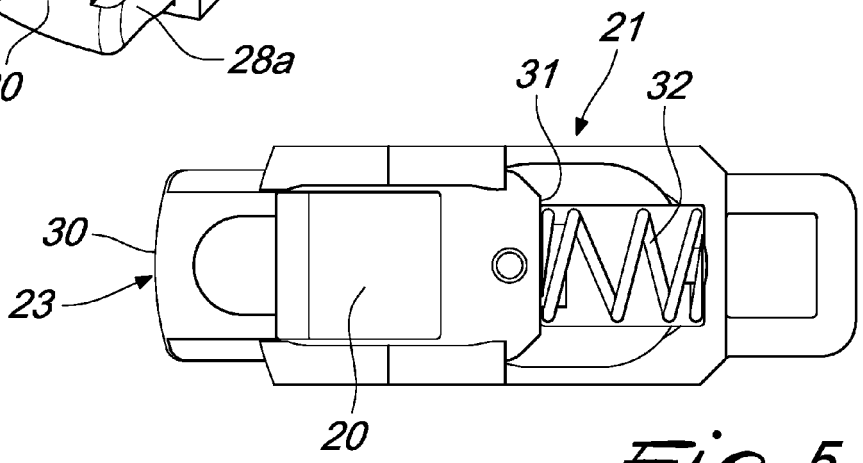


Fig. 5

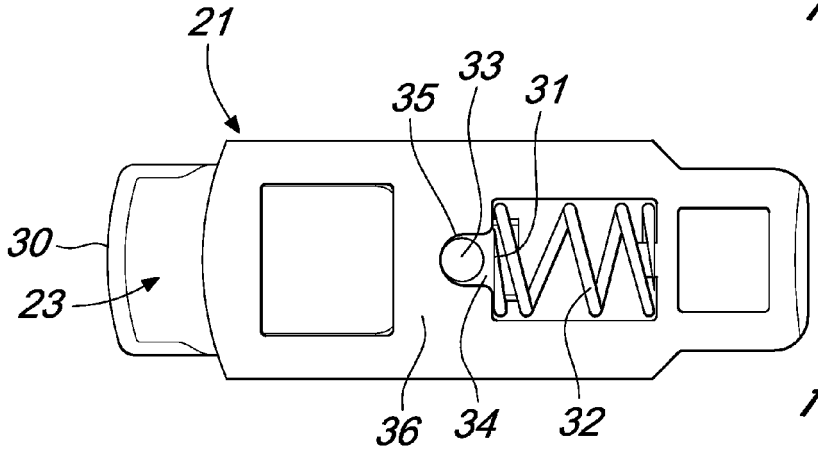
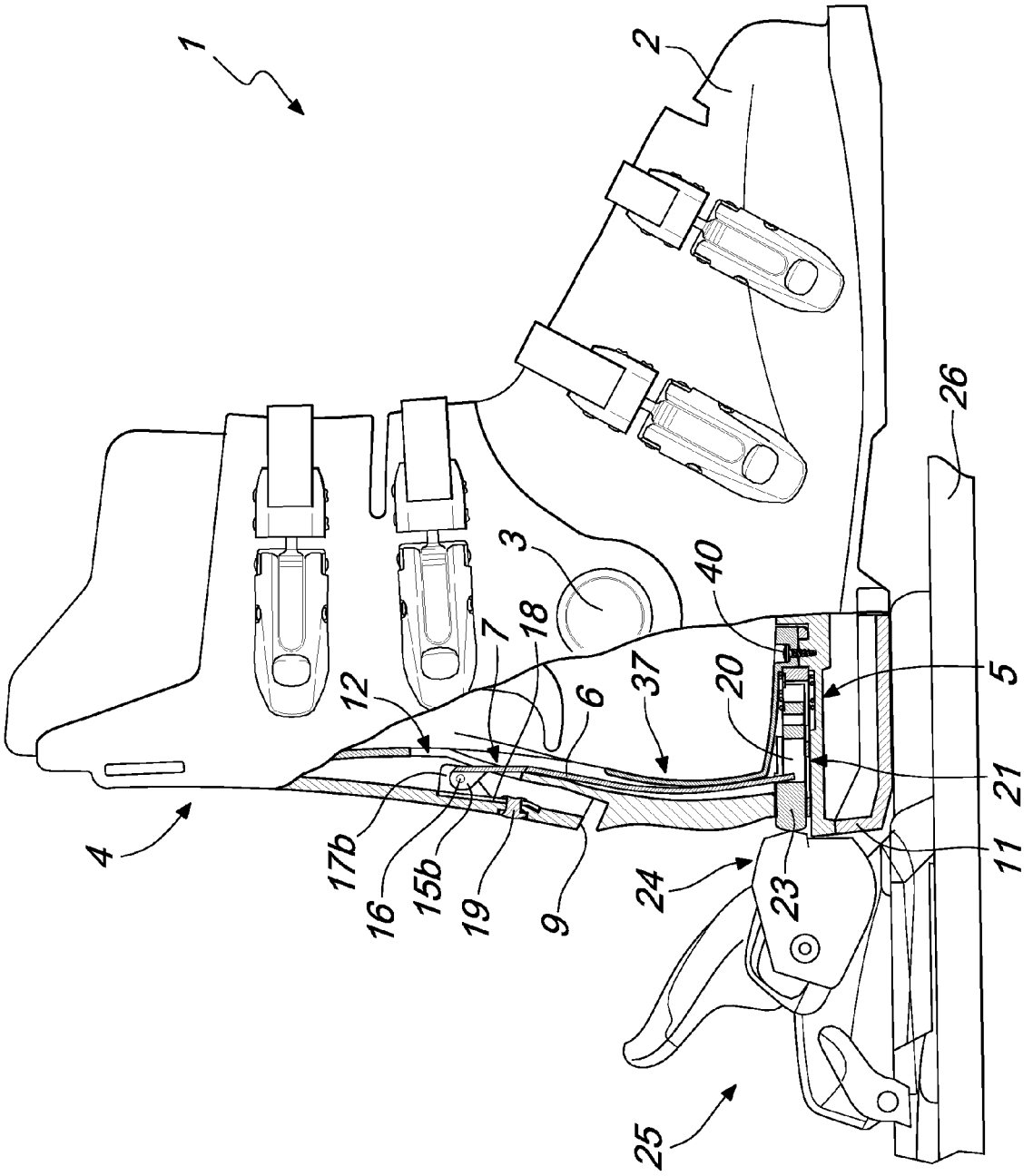


Fig. 7

Fig. 6



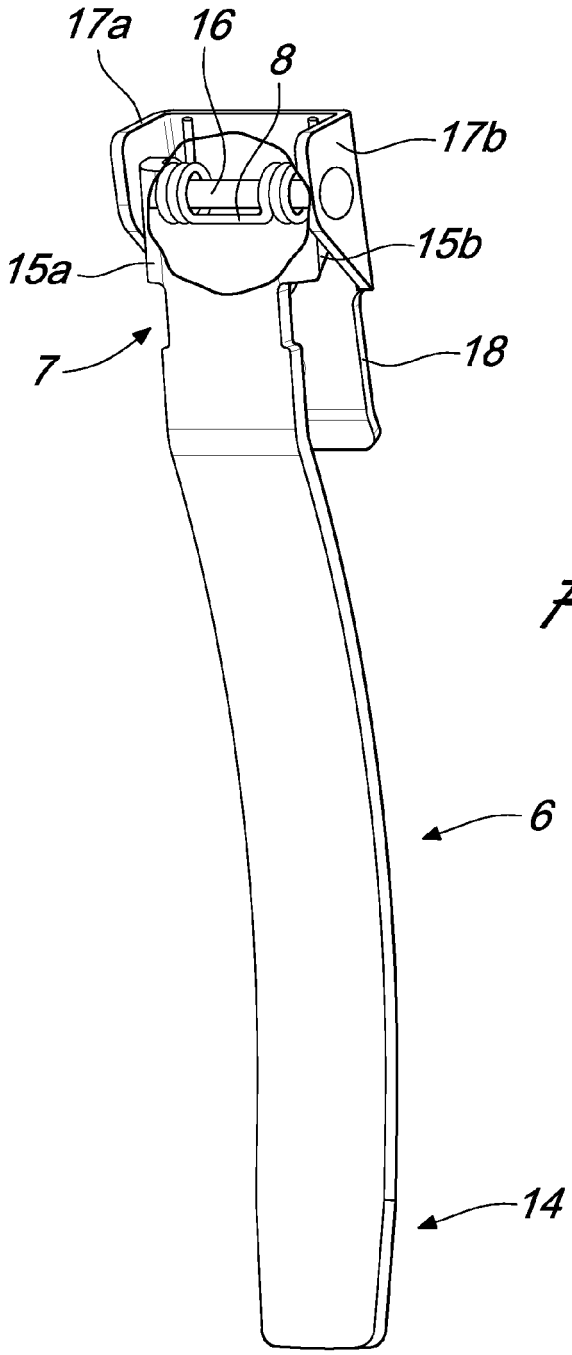


Fig. 8

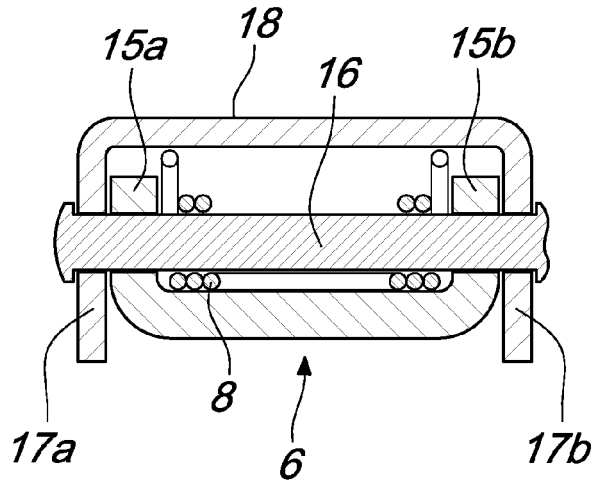


Fig. 9

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EUROPEAN SEARCH REPORT

Application Number
EP 13 18 1781

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A	EP 0 940 096 A2 (HTM SPORT SPA [IT] HEAD TECHNOLOGY GMBH [AT]) 8 September 1999 (1999-09-08) * figure 5 * -----	1	
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The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
The Hague	13 December 2013	Duquénoy, Alain

CATEGORY OF CITED DOCUMENTS

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