(19) Europäisches Patentamt
European Patent Office
Office européen des brevets

(11) EP 2 478 788 A1

(12) **EUROPEAN PATENT APPLICATION**

(43) Date of publication:
25.07.2012 Bulletin 2012/30

(51) Int Cl.:
A43B 5/04 *(2006.01)*

(21) Application number: **12151361.8**

(22) Date of filing: **17.01.2012**

(84) Designated Contracting States:
AL AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HR HU IE IS IT LI LT LU LV MC MK MT NL NO PL PT RO RS SE SI SK SM TR
Designated Extension States:
BA ME

(30) Priority: **24.01.2011 IT TV20110006**

(71) Applicant: **Head Technology GmbH**
6921 Kennelbach (AT)

(72) Inventor: **Pellizzon, Michele**
31010 Maser (TV) (IT)

(74) Representative: **Modiano, Micaela Nadia et al**
Modiano & Partners (IT)
Via Meravigli, 16
20123 Milano (IT)

(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 (4) with respect to the shell (2), particularly for ski boots (1). The first end (7) of a blade (6) is associated internally and at the rear with respect to the bootleg (4), the blade (6) interacting selectively, at the second end (13), with a tooth (16) of a slider (17). The latter is arranged adjacent to the heel (11) and movable axially with respect to the shell (2) in contrast to an elastically deformable element (29).

EP 2 478 788 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 obtain only a limited rearward oscillation of the bootleg during sport practice and at the same time a free oscillation of the same bootleg once the sport is finished in order to achieve an optimal gait for the user.

[0003] Thus US 4,519,150 is known in which a ski boot is disclosed that is comprised of a shell to which a bootleg is pivoted, to the rear of the bootleg a lever being associated the actuation of which enables the activation of a bar that has a threaded end which interacts with a counter-threaded bush which can be arranged 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, thus allowing for example the optimal positioning of the latter during skiing.

[0005] Such a solution however has drawbacks in that manual intervention is required from the user for its activation, but it is not possible to achieve an optimal walking motion since the bootleg is not able to oscillate freely with respect to the shell even with the device deactivated.

[0006] Other devices are also known, of which some are provided, at the bootleg, with, for example, adapted elements, which can be activated for example by way of adapted levers that can be gripped by the user and selectively positioned so as to allow the free oscillation of the bootleg or limit the oscillation thereof, by way of their interaction with adapted projecting parts at and outside of the shell. Such projections however constitute a further drawback, given that they impair the aesthetic form of the boot as well as making it heavier.

[0007] Moreover, activation of the conventional devices is not always easy, given 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 them or, not perceiving the correct operation thereof, utilizes them in an incorrect manner.

[0009] Also known is EP0940096 in which a device is disclosed for adjusting the position of the bootleg with respect to the shell, particularly for ski boots, constituted by at least one lever, composed of a first and a second arm, mutually and rotatably associated at one end by means of an adapted first pivot arranged transversely and to 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 that interacts with a coupling, which is coupled to a ski, in contrast with at least one first elastically deformable element and a second end that selectively interacts, in abutment or otherwise, with the bootleg.

[0011] Although such a solution is undoubtedly valid, it has a drawback owing to the fact that the bootleg and the shell have, in the region in which the device is located, a protrusion that increases the size of the boot, impairing the overall shape thereof.

[0012] Moreover there is a construction-related complication, although limited, both regarding the provision of the female mold part and regarding the assembly of individual parts that require a certain care in assembly.

[0013] Finally in such a solution it is possible for snow to be deposited and ice to form between the first arm and the first seat in which the first spring is accommodated, which can render the activation of the device more difficult.

[0014] Also known are EP0085026, EP0521283, EP0582803, E0664969 and FR2647649 which all exhibit a high structural complexity and considerable encumbrances, as well as the necessity for a manual activation by the user.

[0015] Also known is EP0664969 which, although allowing an activation when the boot is anchored to the ski binding, still has a considerable encumbrance at the rear of the bootleg, which moreover extends in a lower region almost to the sole, as well as a high structural complexity and an operation that requires high precision for achieving for example the optimal interaction between the tab and the seats, where it is possible for them to stick and thus thwart the operation.

[0016] The aim of the present invention is to eliminate the above-mentioned drawbacks, and thus solve the technical problems set out, by devising a device that enables the user to obtain the free oscillation of the bootleg in order to walk or a limitation of such oscillation in order to be able to ski, the assembly being provided with a structural shape that is simple and of contained size.

[0017] Within this aim, an object of the invention is to enable the skier to achieve such two different conditions for the oscillation of the bootleg with respect to the shell automatically and thus without having to operate directly on adapted devices applied at the boot itself and irrespectively of the possible presence of snow or ice on the boot.

[0018] Another object is to provide a device that in addition to the above-mentioned characteristics also is relatively low-cost and enables an abatement of the overall costs, including a reduction in the provision of molds and for the mounting of the device on the boot.

[0019] Another object is to provide a device the activation of which, for skiing, and the deactivation of which, for walking, can be obtained without any direct intervention of the skier on the boot.

[0020] This aim and these and other objects which will become more evident hereinafter are achieved by a device for adjusting the position of the bootleg with respect to the shell, particularly for ski boots, **characterized in that** the first end of a blade is associated internally and at the rear with respect to said bootleg, said blade interacting selectively, at the second end, with a tooth of a slider, which is arranged adjacent to the heel and mov-

able axially with respect to said shell in contrast with an elastically deformable element.

[0021] Further characteristics and advantages of the invention will become more apparent from the detailed description of a specific, 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 the device in the condition that allows skiing;
Figure 2 is a view of a detail of Figure 1;
Figure 3 is a partially sectional view of the boot with the device in the condition that allows walking;
Figure 4 is a sectional view taken along the line IV-IV of Figure 3;
Figure 5 is a view similar to Figure 1 wherein a condition of automatic rearming of the device is shown;
Figure 6 is a first view from the rear of the boot;
Figure 7 is a second view from the rear of the boot;
Figure 8 is a side perspective view of the slider and the blade;
Figures 9, 10 and 11 are views from above of a cross-section, taken along an axial and lateral line, of the slider in the uncompressed condition;
Figures 12, 13 and 14 are views from above of a cross-section, taken along an axial and lateral line, of the slider in the compressed condition.

[0022] In the embodiments that follow, individual characteristics shown in relation to specific examples may in reality be interchanged with other, different characteristics, existing in other embodiments.

[0023] 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.

[0024] With reference to the figures and considering that they are illustrative of some specific embodiments and are to different scales and that in them individual reference numerals correspond to elements that are the same or equivalent, the reference numeral 1 designates a ski boot constituted by a shell 2 to which, by way of adapted bosses 3, a bootleg 4 is pivoted.

[0025] The reference numeral 5 designates the device for adjusting the position of the bootleg 4 with respect to the shell 2, such device being constituted by a blade 6, a first end 7 of which is associated, preferably by means of an adapted rivet 8, internally and to the rear with respect to the bootleg 4.

[0026] The first end 7 of the blade 6 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.

[0027] The blade 6 is directed toward the underlying heel 11 of the boot and is locked to the bootleg 4 so that it cannot oscillate with respect to the rivet 8. For example, the locking occurs at the first end 7 by the partial bending and interpenetration thereof in the thickness of the bootleg 4.

[0028] The blade 6 is thus caused to pass through an adapted opening 30 defined in the shell 2 and thus arranged adjacent to the inner lateral surface 12 of the shell 2, and has a second end 13 that extends so as to affect partially a recess 14 provided in the heel 11.

[0029] At the second end 13 a first longitudinal slot 15 is provided which acts as a seat for temporary interconnection with a tooth 16 .

[0030] Advantageously the tooth 16 is frustum-shaped with the vertex directed toward the outside of the shell 2 and the first slot 15 is shaped complementarily thereto.

[0031] The tooth 16 protrudes axially with respect to a slider 17 movable axially with respect to a box-like body 18 which is embedded in or associated with the lower end of the shell in a region that is adjacent to the flat surface 19 of the heel 11 which interacts with a jaw 20 of a coupling 21 which is coupled to a ski 22.

[0032] In the inactive condition shown in Figures 1 and 2, the slider 17 is connected to the blade 6 and protrudes outside the box-like body 18 and also outside the shell 2 to be able to thus interact with the jaw 20, once the boot has been associated with the ski.

[0033] The slider 17 has, in a transverse cross-section, the shape of an inverted T the stem 23 of which slides within a seat 24 and the wings 25a, 25b of which slide within complementarily shaped guides 26a, 26b provided at the sides of the box-like body 18.

[0034] Advantageously a transverse pin 27 connects the wings 25a, 25b and whose ends protrude outside the box-like body 18 at adapted second slots 28a, 28b formed on the sides of the box-like body 18.

[0035] The transverse pin 27 is arranged approximately halfway along the length of the box-like body 18, so as to create a space, in the opposite direction with respect to the slider 17, which acts as a seat for an elastically deformable element 29, such as a cylindrical helical compression spring, the function of which is to force the slider 17 toward the outside of the shell 2.

[0036] This cross-member 27 acts as a stroke limit for the slider 17.

[0037] A counter 31 is provided which is arranged inside the shell 2 and has a rear surface 32 which faces the blade 6 and a lower surface 33 which is arranged above the box-like body 18 and is associated with the shell 2 by means of a screw 34 which operates on a vertical rib 35 of the shell 2 or of a platform located in a region that is adjacent to the recess 14.

[0038] One or more sealing gaskets can be present, which are arranged for example between the slider 17 and the shell 2 or between the box-like body 18 and the shell 2 so as to prevent any penetration of water into the heel 11.

[0039] The box-like body 18 is fixed to the shell 2 at the end that lies opposite the one provided with the slider 17 by means of a pair of second screws 36a, 36b which engage adapted holes 37a, 37b provided in a pair of tabs 38a, 38b that protrude laterally to the box-like body 18.

[0040] The operation of the invention is as follows: dur-

ing skiing the system is in the condition shown in Figure 1, in which the jaw 20 forces the slider 17 to position the tooth 16 within the first slot 15 of the blade 6. Thus the rearward oscillation of the bootleg 4 is prevented , although a slight bending forward of the bootleg 4 is permitted if the length of the first slot 15 is greater than the encumbrance of the tooth 16.

[0041] When the skier releases the boot from the rear coupling 21, the spring 29 pushes the slider 17 outward until the tooth 16 is disengaged from the blade 6. At this point the blade 6 is free to move, supporting the forward or rearward movement of the bootleg 4.

[0042] Figure 5 shows a condition in which the second end 13 of the blade 6 can be positioned within the recess 14. Once the coupling 21 is fitted on again, upon the first bending of the skier the interconnection between the blade 6 and the tooth 16 will occur again.

[0043] In practice it has been found that the invention has achieved the above-mentioned set aim and objects, a device having been obtained that enables the user to obtain the free oscillation of the bootleg in order to walk or a limitation of such oscillation in order to be able to ski, the assembly being provided with a structural shape that is simple and of contained size.

[0044] Moreover the skier can achieve such two different conditions for the oscillation of the bootleg with respect to the shell automatically upon engagement and upon release of the coupling even in the presence of snow or ice on the boot.

[0045] The device moreover has a small number of components which makes it possible to achieve construction-related simplification.

[0046] Obviously the materials used as well as the dimensions constituting the individual components of the invention can be more pertinent to specific requirements.

[0047] The various means for effecting certain different functions shall not in any way coexist only in the illustrated embodiment, but may be present in many embodiments per se, even if not illustrated.

[0048] The characteristics indicated above as advantageous, advisable or similar, may also be missing or substituted by equivalent characteristics.

[0049] The disclosures in Italian Patent Application No. TV2011A000006 from which this application claims priority are incorporated herein by reference.

[0050] 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** the first end (7) of a blade (6) is associated internally and at the rear with respect to said bootleg (4), said blade (6) interacting selectively, at the second end (13), with a tooth (16) of a slider (17), which is arranged adjacent to the heel (11) and movable axially with respect to said shell (2) in contrast with an elastically deformable element (29).

2. The device according to claim 1, **characterized in that** it is constituted by a blade (6), a first end (7) of which is associated, by means of a rivet (8), internally and at the rear with respect to said bootleg (4), said first end (7) being 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).

3. The device according to claims 1 and 2, **characterized in that** said blade (6) is directed toward said underlying heel (11) of said boot (1) and is locked to said bootleg (4) so that it cannot oscillate with respect to said rivet (8), the locking occurring at said first end (7) by the partial bending and interpenetration thereof in the thickness of said bootleg (4).

4. The device according to claims 1 and 3, **characterized in that** said blade (6) passes through an adapted opening (30), which is provided in said shell (2) and is thus arranged adjacent to an inner lateral surface (12) of said shell (2) and has a second end (13) that extends so as to affect partially a recess (14) provided in said heel (11), a first longitudinal slot (15), which acts as a seat for temporary connection to a tooth (16), being formed at said second end (13).

5. The device according to claims 1 and 4, **characterized in that** said tooth (16) is frustum-shaped, with the vertex directed toward the outside of said shell (2), and said first slot (15) is shaped complementarily thereto, said tooth (16) protruding axially with respect to a slider (17) movable axially with respect to a box-like body (18) which is embedded in or associated with the lower end of said shell (2) in a region that is adjacent to the flat surface (19) of said heel (11) which interacts with a jaw (20) of a coupling (21) which is coupled to a ski (22).

6. The device according to claims 1 and 5, **characterized in that** in the inactive condition said slider (17) is connected to said blade (6) and protrudes outside said box-like body (18) and also outside said shell (2) so as to be able to thus interact with said jaw (20), once said boot has been associated with the ski.

7. The device according to claims 1 and 6, **characterized in that** said slider (17) has, in a transverse cross-section, the shape of an inverted T the stem (23) of which slides within a seat (24) and the wings

(25a, 25b) of which slide within complementarily shaped guides (26a, 26b) provided at the sides of said box-like body (18), a transverse pin (27) connecting said wings (25a, 25b) and having ends which protrude outside said box-like body (18) at adapted second slots (28a, 28b) formed on the sides of said box-like body (18).

8. The device according to claims 1 and 7, **characterized in that** said transverse pin (27) is arranged approximately halfway along the length of said box-like body (18), so as to create a space, in the opposite direction with respect to said slider (17), which acts as a seat for an elastically deformable element (29), such as a cylindrical helical compression spring, the function of which is to force said slider (17) toward the outside of said shell (2).

9. The device according to claims 1 and 8, **characterized in that** it comprises a counter (31) which is arranged inside said shell (2) and has a rear surface (32) which faces said blade (6) and a lower surface (33) which is arranged above said box-like body (18) and is associated with said shell (2) by means of a screw (34) which operates on a vertical rib (35) of said shell (2) or of a platform located in a region that is adjacent to said recess (14).

10. The device according to claims 1 and 9, **characterized in that** it comprises one or more sealing gaskets which are arranged between said slider (17) and said shell (2) or between said box-like body (18) and said shell (2) so as to prevent any penetration of water into said heel (11), said box-like body (18) being fixed to said shell (2) at the end that lies opposite the one provided with said slider (17) by means of a pair of second screws (36a, 36b) which engage adapted holes (37a, 37b) provided in a pair of tabs (38a, 38b) that protrude laterally to said box-like body (18).

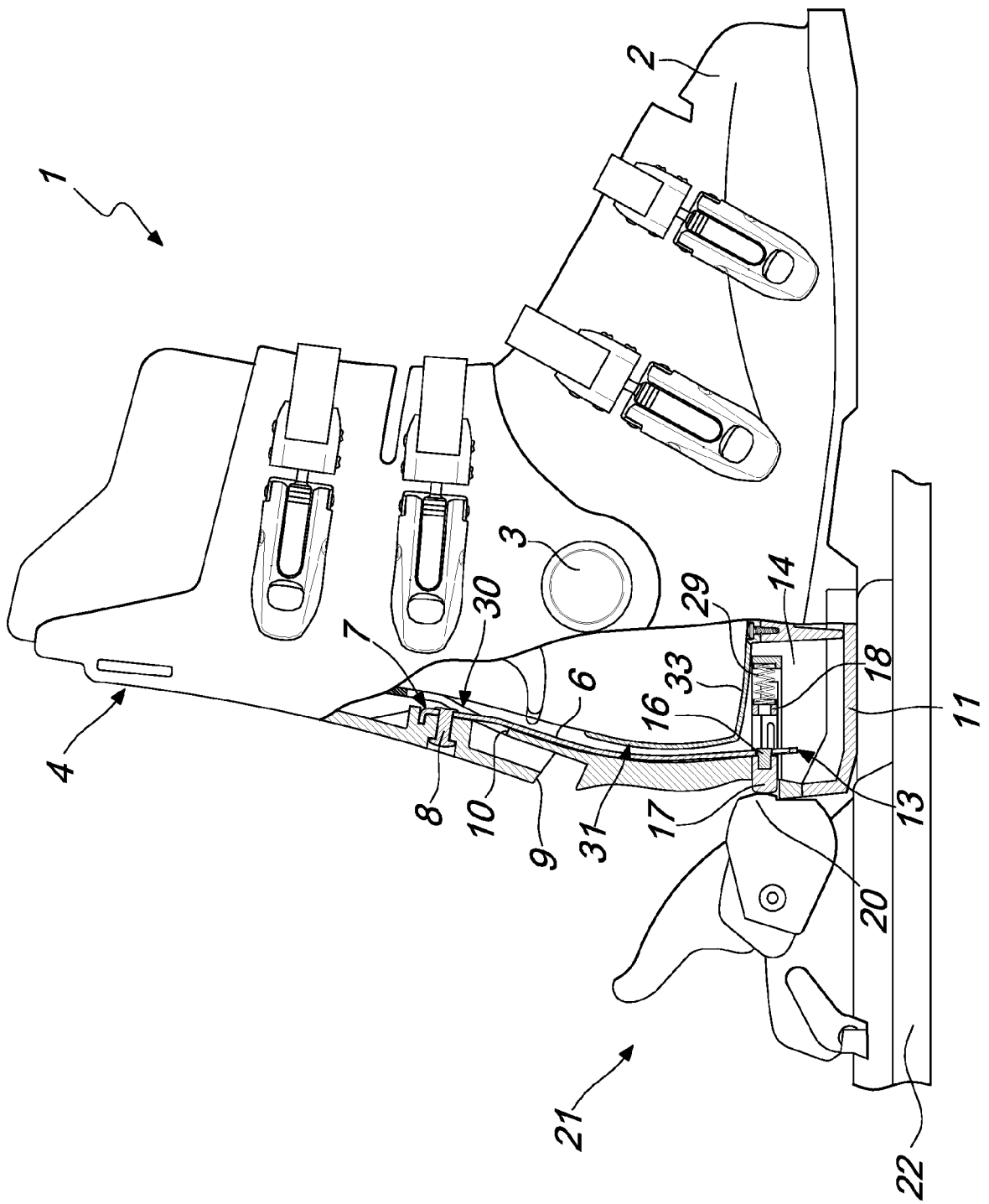

Fig. 1

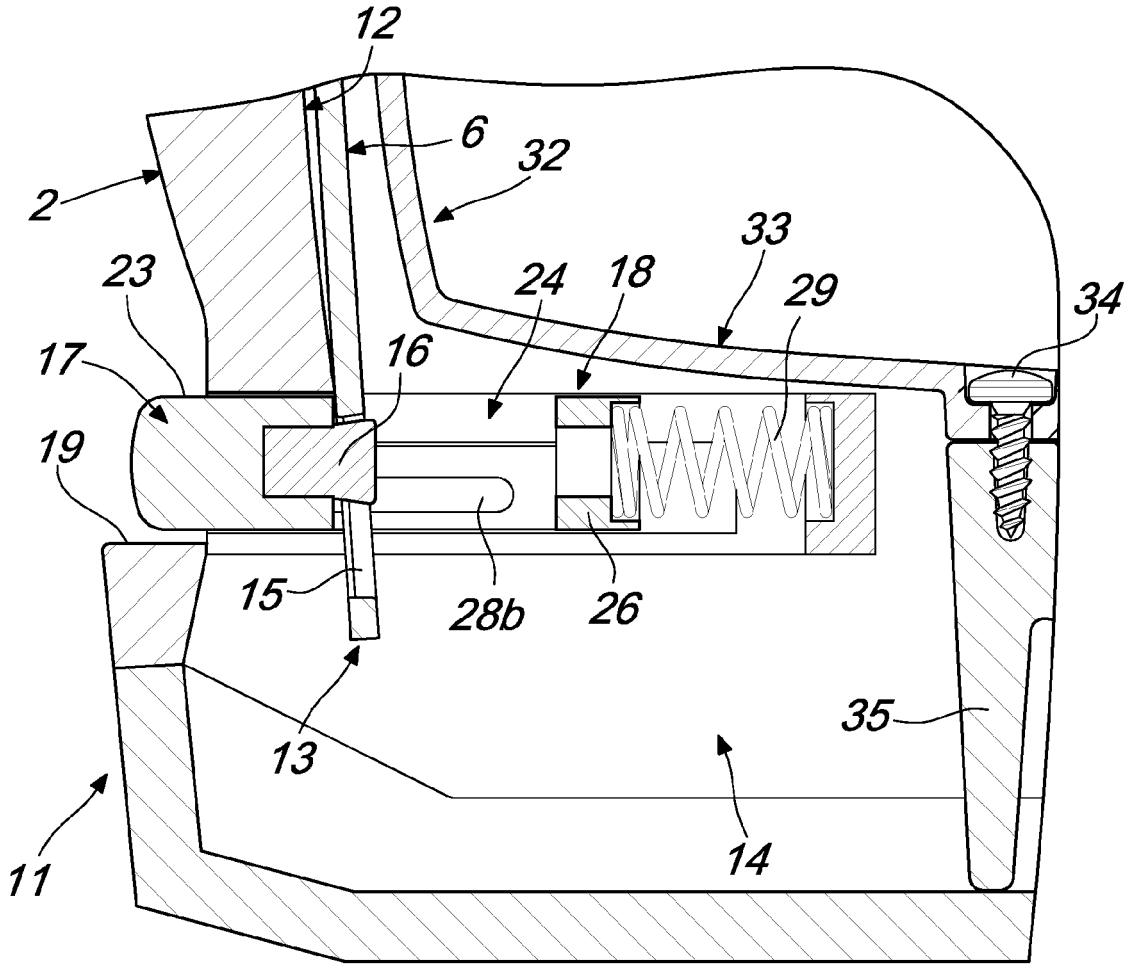

Fig. 2

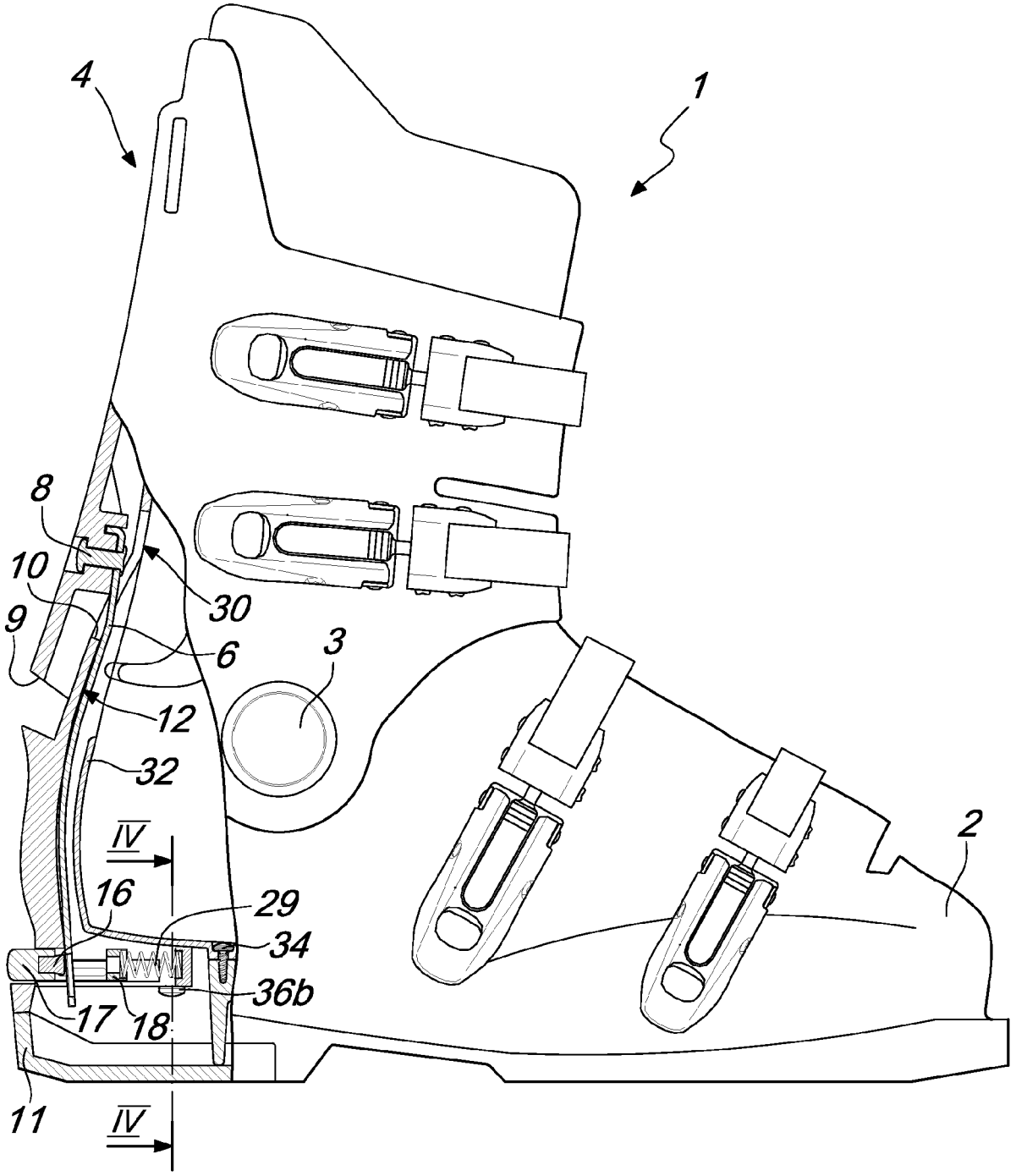

Fig. 3

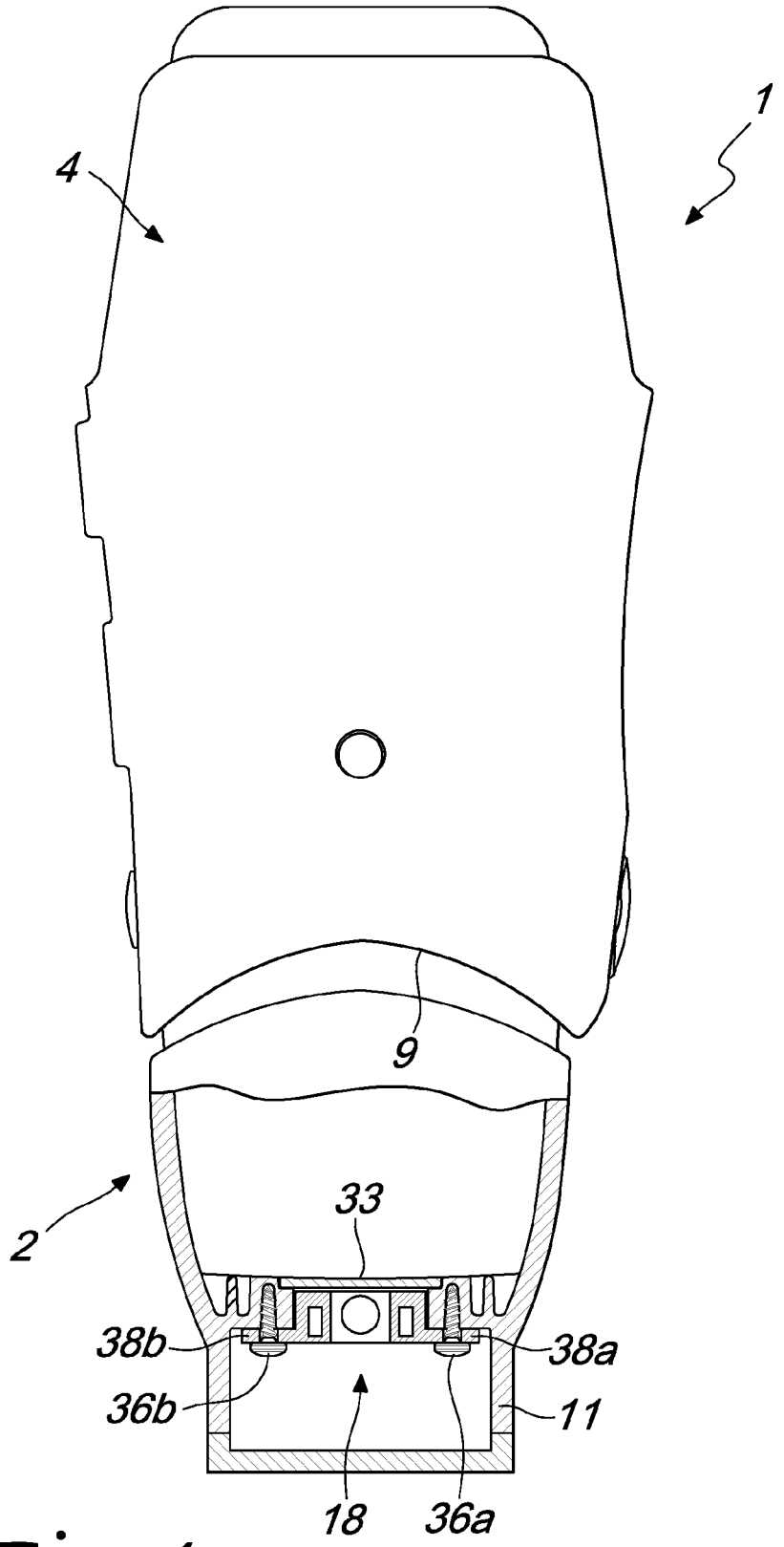

Fig. 4

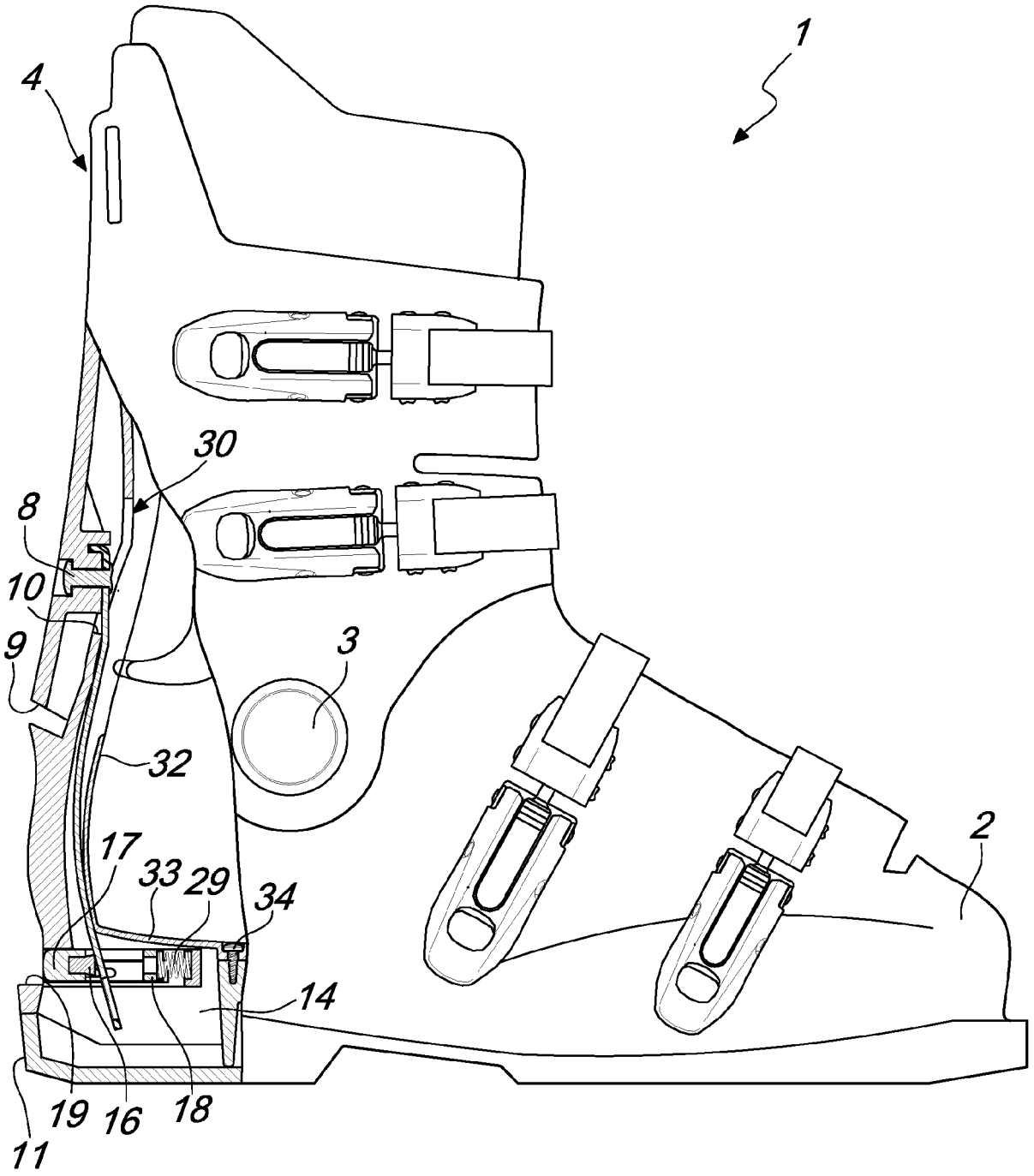

Fig. 5

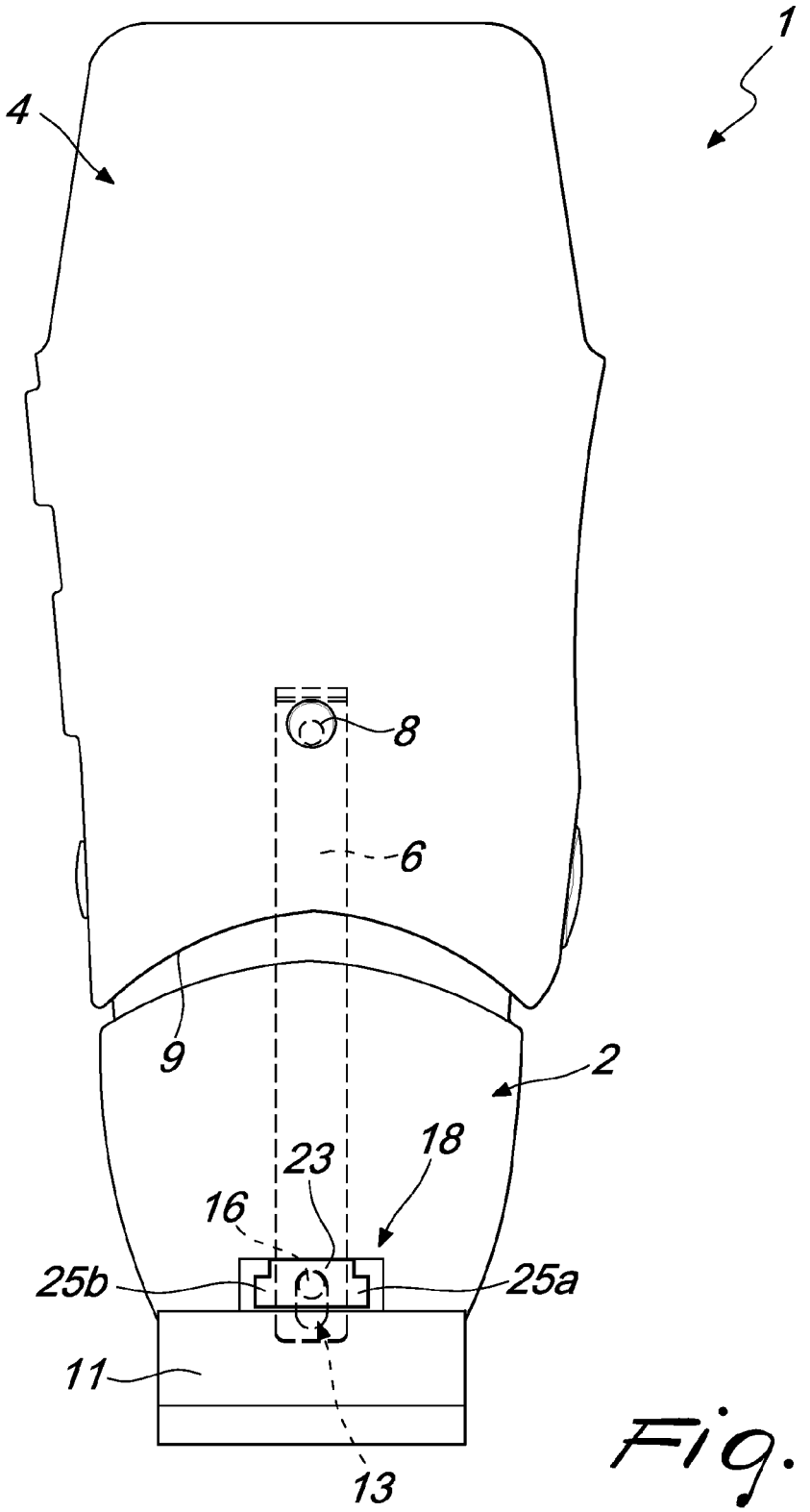

Fig. 6

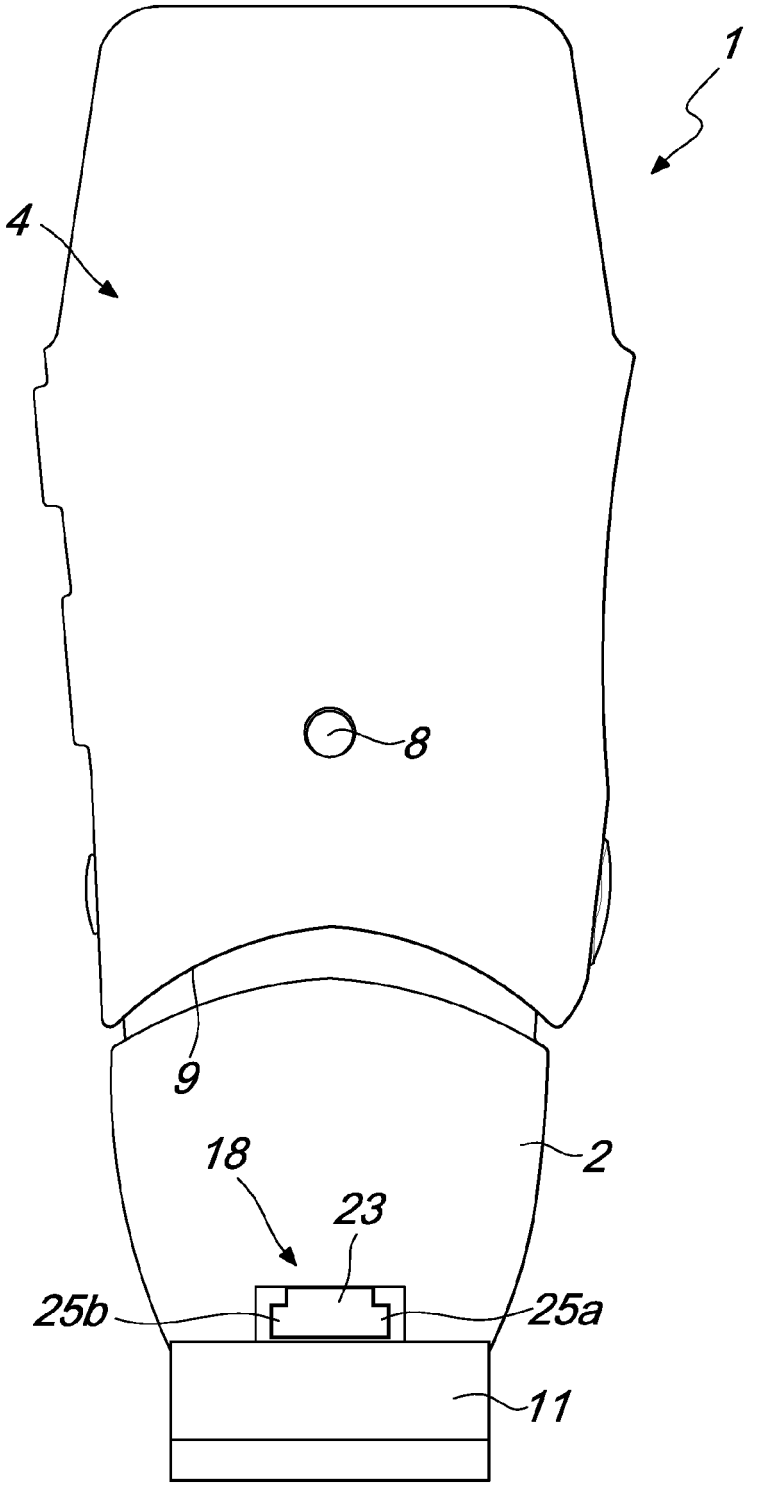

Fig. 7

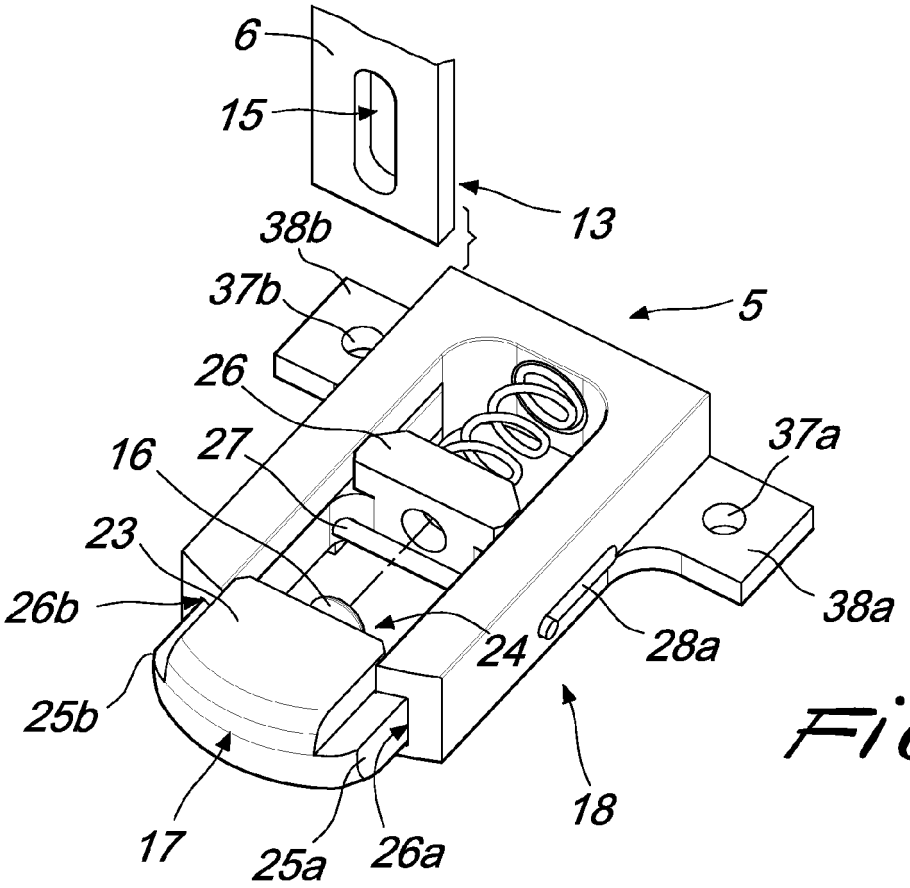
6
15
13
38b
37b
5
26
27
37a
16
23
26b
24
28a
38a
25b
17
25a
26a
18

Fig. 8

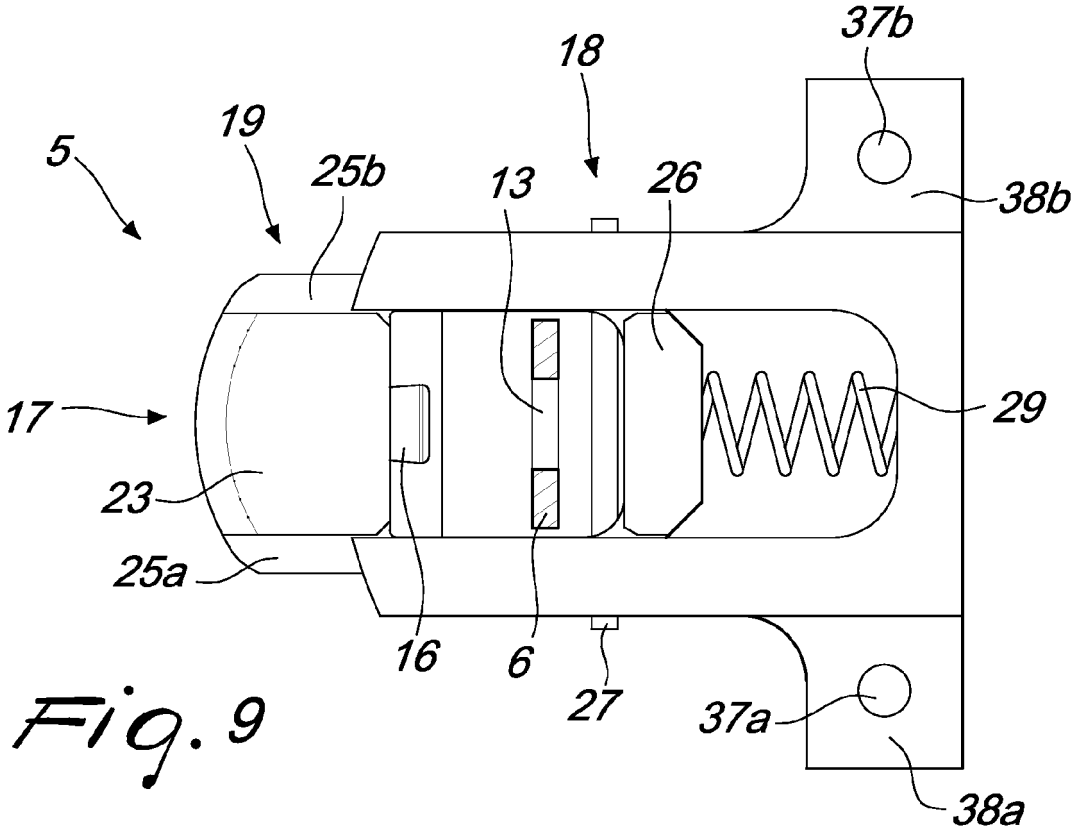
37b
18
19
5
25b
13
26
38b
29
17
23
25a
16
6
27
37a
38a

Fig. 9

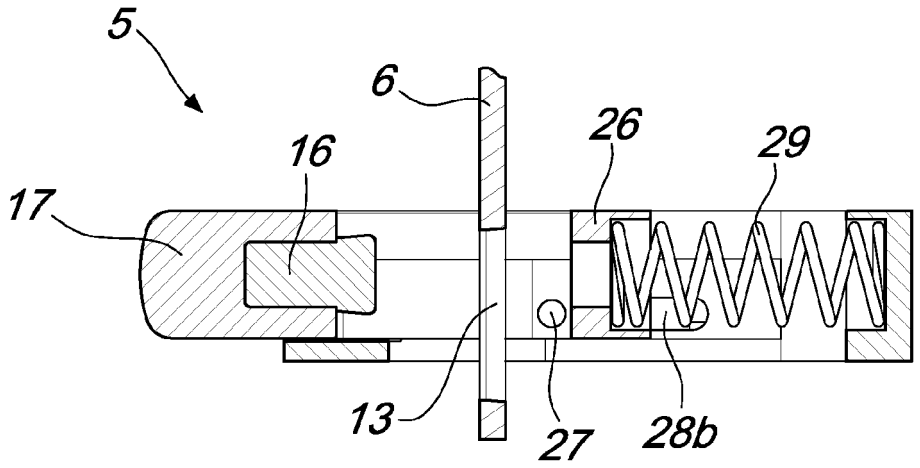

Fig. 10

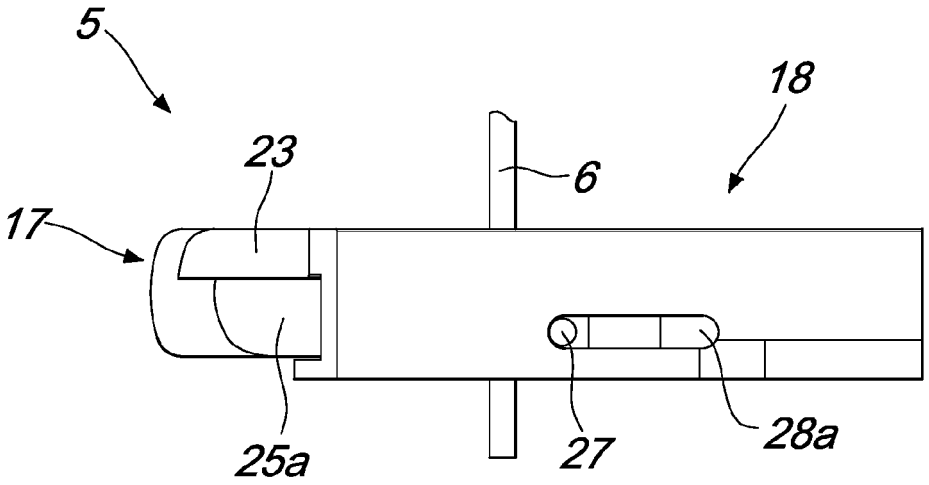

Fig. 11

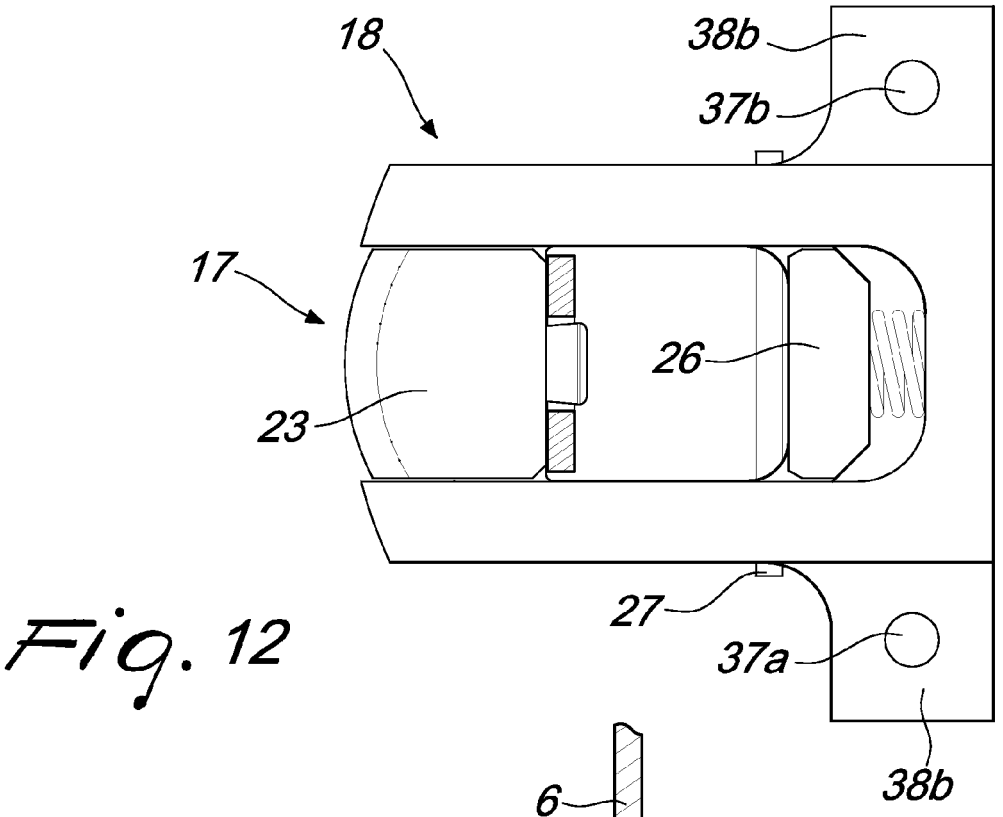

Fig. 12

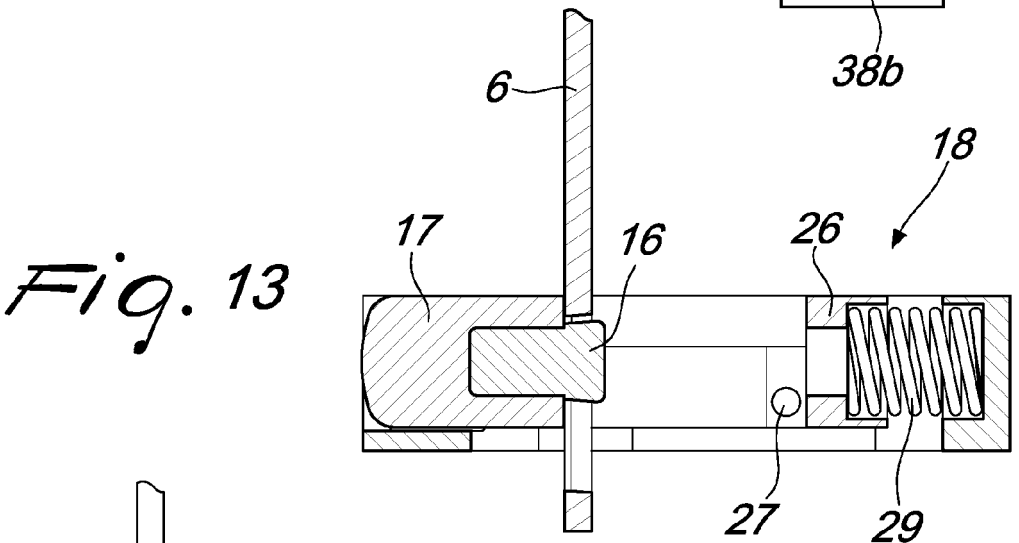

Fig. 13

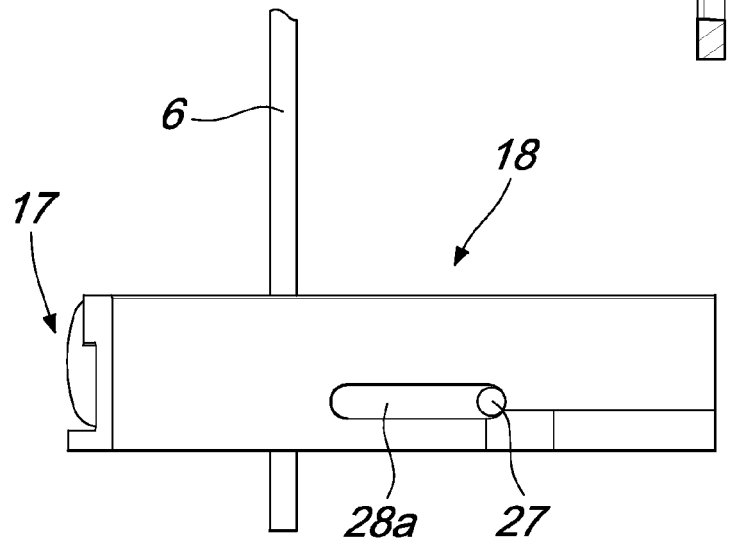

Fig. 14

Europäisches Patentamt
European Patent Office
Office européen des brevets

EUROPEAN SEARCH REPORT

Application Number
EP 12 15 1361

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
X A	FR 2 857 831 A1 (ATOMIC AUSTRIA GMBH [AT]) 28 January 2005 (2005-01-28) * page 12, line 10 - page 13, line 2; figures 1,2 * -----	1-4 5	INV. A43B5/04
A,D	EP 0 940 096 A2 (HTM SPORT SPA [IT] HEAD TECHNOLOGY GMBH [AT]) 8 September 1999 (1999-09-08) * paragraphs [0042] - [0043]; figures 10,11 * -----	1-10	
A,D	EP 0 664 969 A2 (TYROLIA FREIZEITGERAETE [AT]) 2 August 1995 (1995-08-02) * column 5, line 25 - column 6, line 20; figures 1-3 * -----	1-10	
A	EP 1 366 684 A1 (TECNOLOGICA S P A [IT]) 3 December 2003 (2003-12-03) * figures * -----	1-10	
A	EP 1 226 768 A1 (SALOMON SA [FR]) 31 July 2002 (2002-07-31) * figures 1,2,5 * -----	1-10	TECHNICAL FIELDS SEARCHED (IPC) A43B

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
Munich	30 April 2012	Vesin, Stéphane

CATEGORY OF CITED DOCUMENTS

X : particularly relevant if taken alone
Y : particularly relevant if combined with another document of the same category
A : technological background
O : non-written disclosure
P : intermediate document

T : theory or principle underlying the invention
E : earlier patent document, but published on, or after the filing date
D : document cited in the application
L : document cited for other reasons

& : member of the same patent family, corresponding document

1

EPO FORM 1503 03.82 (P04C01)

ANNEX TO THE EUROPEAN SEARCH REPORT ON EUROPEAN PATENT APPLICATION NO. EP 12 15 1361

This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report. The members are as contained in the European Patent Office EDP file on
The European Patent Office is in no way liable for these particulars which are merely given for the purpose of information.

30-04-2012

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
FR 2857831 A1	28-01-2005	AT 500079 A1	15-10-2005
		DE 102004030959 A1	10-02-2005
		FR 2857831 A1	28-01-2005
		US 2005016027 A1	27-01-2005
EP 0940096 A2	08-09-1999	AT 345061 T	15-12-2006
		DE 69933956 T2	10-05-2007
		EP 0940096 A2	08-09-1999
		ES 2273451 T3	01-05-2007
		IT MI980453 A1	06-09-1999
EP 0664969 A2	02-08-1995	AT 401710 B	25-11-1996
		EP 0664969 A2	02-08-1995
EP 1366684 A1	03-12-2003	EP 1366684 A1	03-12-2003
		IT PN20020030 U1	01-12-2003
EP 1226768 A1	31-07-2002	EP 1226768 A1	31-07-2002
		FR 2819692 A1	26-07-2002
		IT MI20030102 U1	25-09-2003
		US 2002095822 A1	25-07-2002

EPO FORM P0459

For more details about this annex : see Official Journal of the European Patent Office, No. 12/82

REFERENCES CITED IN THE DESCRIPTION

This list of references cited by the applicant is for the reader's convenience only. It does not form part of the European patent document. Even though great care has been taken in compiling the references, errors or omissions cannot be excluded and the EPO disclaims all liability in this regard.

Patent documents cited in the description

- US 4519150 A **[0003]**
- EP 0940096 A **[0009]**
- EP 0085026 A **[0014]**
- EP 0521283 A **[0014]**
- EP 0582803 A **[0014]**
- EP 0664969 A **[0014] [0015]**
- FR 2647649 **[0014]**
- IT TV20110006 A **[0049]**