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(54) Variable configuration ski boot

(57) The ski boot (S), formed by a bootleg (1), a lower shell (2), connected to the bootleg, and a sole (3), fastened to the lower shell, includes a device (100, 200)m in which there are a first hinge joint (10, 110), which allows the tilting motion of the bootleg (1) with respect to the relative lower shell (2) on a horizontal axis (T), transversal to the boot (S) and situated at a level almost coinciding with the ankle articulation, when the foot (P) wears the boot (S); a second hinge joint (20, 120), which has a horizontal axis (L) arranged perpendicular to the first one, and allows swinging of the sole (3) with respect to the bootleg (1) on a plane orthogonal to the tilting motion of the latter; a mechanism (30, 300) operated by the tilting motion of the bootleg (1) with respect to the first joint (10, 110) and which drives the sole (3) ina swinging motion with respect to the second joint (20, 120) with a prefixed angular ratio and in such a direction, that a forward inclination of the bootleg (1) determines an inclination of the sole (3), which brings the inner lateral side (3a) of the latter to a lower level with respect to the relative outer lateral side (3b). The boot (S) is designed for being used with "carving" skis and allows an increase of the transversal inclination of the outer ski, with respect to the turn, with a simple bending of the leg onto the ankle, without bending too much the whole body. The increased inclination of the ski allows a bigger gripping of the blade and the use of the self-steering feature of this kind of ski.

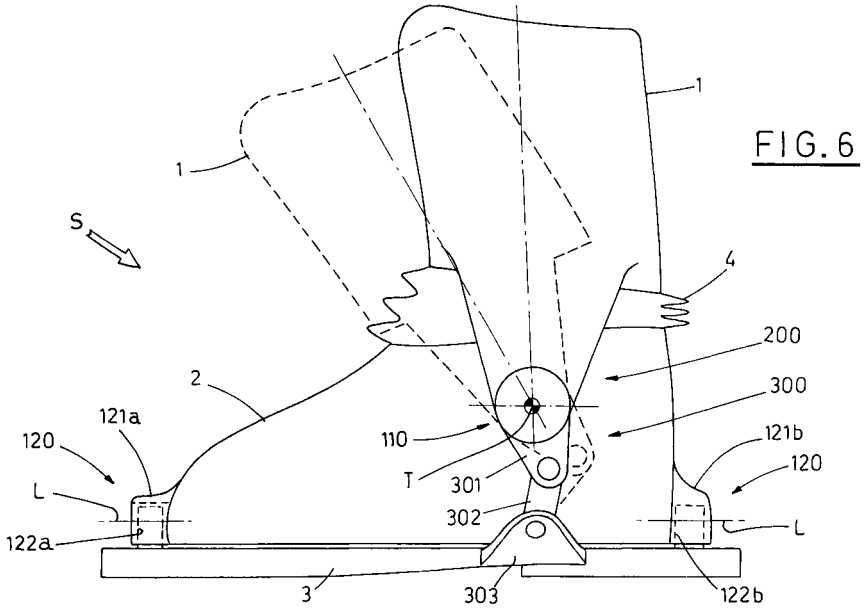

FIG. 6

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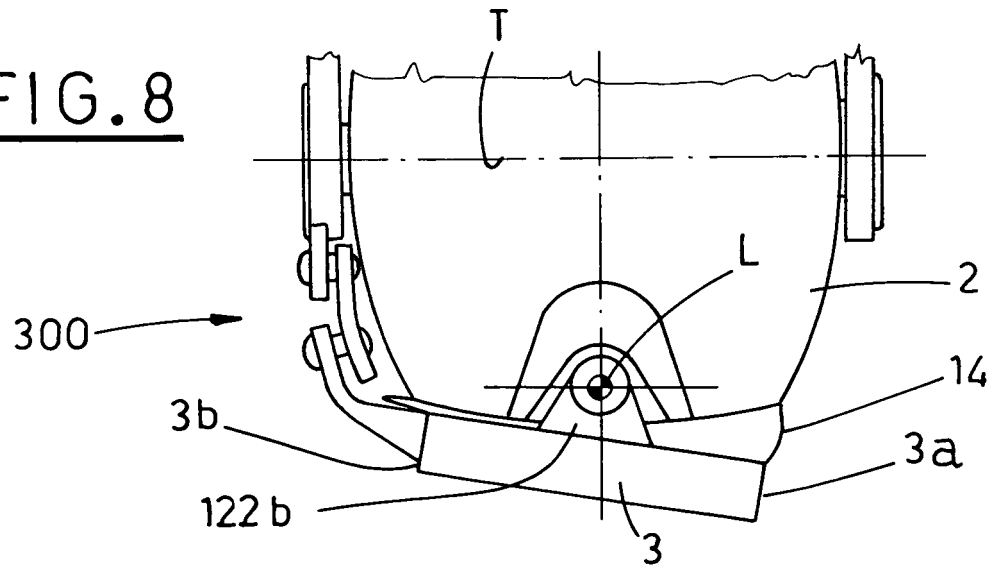
FIG. 8



Description

[0001] The invention relates to the field of ski equipment, with particular reference to ski boots.

[0002] The technical evolution of materials and technologies has deeply transformed skis, safety bindings and boots, which, in turn has caused even radical changes of the skiing from the beginnings up till now.

[0003] In this context, the ski boots have become an essential element of the interaction between the limb and the ski for the guiding of the latter.

[0004] Recently, a new type of ski, called "carving", has been released, different from the traditional ski in the conformation of the sides, which are curved, so that the ski width is considerably bigger in the extremity areas than in the central area.

[0005] This feature, called "side-cut" in the jargon, can be smaller or bigger in relation to different models, the intended use and the technical level of the skier for whom the ski is destined, and it is combined with the considerably smaller ski length with respect to the one considered suitable for each skier according to the old reference parameters.

[0006] The "side-cut" allows a self-steering effect of the ski when it is disposed on one edge, that is inclined with respect to the ground.

[0007] This, together with a better manageability resulting from the smaller length and weight with respect to other ski models, makes it easier and less tiring for the skier to enter the turn and to change the trajectory quicker.

[0008] Although it is less stable in straight trajectory at high speed than the traditional ski, the carving ski has practically replaced the traditional one on the market, due to the above mentioned qualities, appreciated by the beginner-medium level skiers, who can observe the increase of their abilities, as well as the advanced level skiers, who, bending strongly the body position and, consequently, the skis, can make also turns of small radius, making them with well rounded trajectories and with limited skidding of the outer ski, to which the maximum pressure is applied.

[0009] Obviously, in order to maintain balance with the very inclined body position, it is necessary to have a suitable speed, so that the created centrifugal force is sufficient to contrast the overturning moment determined by the body barycenter, when it falls out of the resting base.

[0010] The boots of known type prevent any ankle movement, so that the foot is integral with the leg, leaving the latter with a limited possibility to bend forward, therefore the transversal inclination, which can be imposed to the ski with respect to the ground, depends on the inclination of the limb and consequently, of the body, which needs, as it has already been said, as higher speed, as the inclination is bigger, to be kept in balance.

[0011] It is known that the production of skis takes into consideration also the inclination of the run to be covered and first of all, the trajectory of the ski on the run.

[0012] Actually, skiing the run diagonally, the angle between the ski and the ground increases together with the increase of the inclination, with the same body position, while the inclination angle is not affected by the bigger or smaller run inclination, when the ski is situated on the maximum inclination line.

[0013] The relation between the ski transversal inclination, the limb and the body inclination, and the speed necessary to keep balance remains anyway valid, although the values of the parameters concerned, variable in each moment, determine results clearly different from one situation to another.

[0014] The object of the present invention is to propose a ski boot with a variable configuration, which is to be used with carving skis, and which has a device for inclining transversally the boot sole with respect to the bootleg, so as to increase the transversal inclination of the ski outer to the turn, with respect to the inclination of the relative limb and the body, in order to utilize at best the characteristics of the skis also at a speed lower than the one currently needed to keep the balance in an analogous situation.

[0015] Another object of the present invention is to propose a device which is controlled by the forward longitudinal bending of the leg over the ankle, so that the inclination of the boot sole increases, according to a prefixed relation, by increasing the bending angle, and vice-versa for the return to the initial position.

[0016] A further object of the present invention is to propose a ski boot, equipped with the device, which does not obstacle movements with skis or without.

[0017] A yet further object of the present invention is to propose a ski boot, equipped with a device of simple conception, sure working, reduced dimensions and limited weight.

[0018] The characteristic features of the invention will be better explained in the following description of some preferred embodiments, in accordance with the contents of the claims and with reference to the enclosed figures, in which:

- Figure 1 is a lateral, schematic view of a first embodiment of the proposed ski boot, in a first operation position;
- Figure 1A is a lateral view of an inner device of the boot of Figure 1, in the corresponding operation position;
- Figure 2 is a rear view of the boot in the position of Figure 1;
- Figure 2A is a rear view of the device of Figure 1A in the corresponding operation position;
- Figure 3 is a prospective view of the mechanism of Figures 1A and 2A;

- Figure 4 shows the boot of Figure 1 in a second operation position;
- Figure 4A is a view, analogous to Figure 1A, of the inner device in the position corresponding to the one of the boot of Figure 4;
- Figure 5 is a rear view of the boot in the position of Figure 4;
- Figure 5A is a rear view, analogous to Figure 2A, of the device in the position corresponding to the one of the boot of Figure 5;
- Figure 6 is a schematic, lateral view of a second embodiment of the proposed boot; the continuous and broken lines show respectively the same positions of the boot as Figures 1 and 4 of the first embodiment;
- Figure 7 is a rear view of the boot of Figure 6, in the position corresponding to the one indicated with continuous line in said Figure;
- Figure 8 is a partial, rear view of the boot of Figure 6, in the position corresponding to the one indicated with broken line in said Figure;
- Figures 9 and 9A are enlarged and longitudinal section views of an additional member of the boot of Figure 6, in two respective operation positions.

[0019] Having regards to the above described Figures, the reference S indicates the proposed ski boot, as a whole, especially designed to be used with the carving skis, mentioned in the introductory note.

[0020] The Figures show only the left boot, but it is obvious that the following description is valid also for the right boot, which is symmetrically identical.

[0021] Figures from 1 to 5A refer to a first embodiment of the boot S, including a bootleg 1, a lower shell 2, made integral with the sole 3 and a device 100.

[0022] The bootleg 1 and the lower shell 2 are connected to each other, as it will be better described later on, by the device 100, and are joined, in the intermediate area, by a soft sleeve 4, made preferably of heat insulating material, which is capable of resuming the continuity of the limb housing, assuring at the same time, a suitable protection of the limb against cold and preventing the entrance of water and snow.

[0023] The shape of the sole 3 is similar to the shape of a traditional boot sole, intended to be hooked to a ski by a relative safety binding of known type.

[0024] The Figures do not show the hooks for opening and closing the boot, since they are known and are not relevant to the invention.

[0025] The device 100 includes a rigid covering 101, made e.g. of light metal alloy, which extends from the outer side of the boot S to the rear part thereof.

[0026] In the outer side area of the bootleg 1, the covering 101 forms a circular sector 102, whose center is coaxial with a first hinge joint 10, which is made in the device 100 and whose horizontal axis T is arranged transversally to the boot S and situated at a level almost coinciding with the ankle articulation, when the foot P wears the boot.

[0027] Two guides 103a, 103b, made in the circular sector 102, extend along relative circumference arcs of different radius, concentric with the axis T of the first joint 10.

[0028] Corresponding cursors 104a, 104b, fastened to the side of the bootleg 1, engage sliding with the guides 103a, 103b.

[0029] Inside the covering 101, the cursors 104a, 104b are integral with an arm 105, introduced freely into a housing 106 formed by the covering 101.

[0030] The arm 105 is pivoted on the first joint 10, situated below (Figures 1 and 2).

[0031] Therefore, the bootleg 1 is allowed a tilting motion on a plane vertical, longitudinal to the boot S, along a semicircular trajectory, concentric with the ankle articulation, forward as well as backward, beginning from the condition, in which the leg is more or less vertical (Figure 1).

[0032] If there is no limb and/or stress, the bootleg 1 is maintained in a substantially vertical position by suitable return means 115, including e.g. a pulling spring, whose one end is fastened to the arm 105 and whose other end is fastened to the covering 101 (Figure 1) .

[0033] The spring is extended when the bootleg 1 bends forward (Figure 4), but a slight elastic reaction performed by the spring does not affect considerably the effort necessary to move.

[0034] The covering 101 extends from the area of the first joint 10 toward the rear part of the boot S and folds toward the center of the boot, thus forming a substantially square portion 101a, which supports a second hinge joint 20, made in the device 100 and having its axis L orthogonal and coplanar with the axis T of the first joint 10.

[0035] Thus, the axis L is more or less coinciding with the ankle articulation.

[0036] The lower shell 2 is rigidly cantilevered to the pin 21 of the second joint 20, so as to swing, together with the sole 3, on a vertical plane, transversal to the boot S, perpendicular to the tilting plane of the bootleg 1.

[0037] The device 100 includes also a mechanism 30, housed inside the covering 101 and interconnecting the first joint 10 and the second joint 20.

[0038] The mechanism 30 is operated by the tilting motion ion of the bootleg 1 with respect to the first joint and aimed at driving the lower shell 2 into rotation, together with the sole 3, with respect to the second joint 20, with a prefixed angular ratio and with such a direction, that for a certain forward tilting of the bootleg 1 an inclination of the sole 3 corresponds, which brings the inner lateral side 3a of the latter to a lever lower than the outer lateral side 3b (Figure 5).

[0039] The mechanism 30 moves backwards, when the bootleg 1 is brought back to the vertical position, bringing the whole lower shell 2 and sole 3 group back to the initial position.

[0040] The backwards bending of the limb from the vertical position causes the moving back of the body weight, which is always counterproductive for skiing, and for this reason the stroke of the bootleg 1 in this direction is limited and the action of the mechanism 30 is performed in a different way in that moment.

[0041] According to the shown, non limiting example, the mechanism 30 includes a double profile cam 31, keyed onto the pin 11 of the first joint 10, integrally with the arm 105.

[0042] The cam 31 is introduced into a slot 32, made in a floating plate 33, hinged to a lever 34, which is arranged perpendicular to the cam - plate group and made radially integral with the pin 21 of the second joint 20 (Figure 3).

[0043] The cam 31 touches contemporarily, without clearance, the upper horizontal wall 32a and the lower horizontal wall 32b of the slot 32, and its double profile is such that it remains in contact with the slot during the whole programmed angular movement, so as to avoid uncontrolled movements of the sole 3, which could cause serious damages during the boot S use.

[0044] It is quite obvious that any other embodiment of the mechanism 30, different from the described one, must satisfy the same condition.

[0045] As it is clearly seen in Figures 1A, 2A, 3, 4A, 5A, the forward tilting motion of the bootleg 1 causes a coinciding swinging motion of the arm 105 and consequently of the cam 31, which determines the rising of the floating plate 33 and thus the operation of the lever 34, with a resulting rotation of the pin 21 of the second joint 20 and consequently of the lower shell 2 together with the sole 3.

[0046] It has been supposed, in a purely approximate way, that a forward tilting of the bootleg 1 of $25 \div 30°$, that is more or less as much as allowed by the ankle, causes a transversal swing movement of the lower shell 2 and of the sole 3 by more or less $8 \div 10°$.

[0047] The exact values will be defined by the practical tests conducted by an expert in the field.

[0048] Figures from 6 to 9A refer to a second embodiment of the boot S, likewise including a bootleg 1, a lower shell 2, a sole 3 and a device 200.

[0049] The device 200 includes a first joint 110, having the axis T arranged like the one of the first embodiment, that is horizontal, transversal to the boot S and coinciding with the ankle articulation.

[0050] The first joint 110 is shaped in such a way, as to fasten mutually the bootleg 1 and the lower shell 2 from the outer side as well as from the inner side (see Figure 7).

[0051] Therefore, according to this embodiment, the bootleg 1 can tilt with respect to the lower shell 2 on a longitudinal vertical plane, but it is integral with the latter along a transversal plane.

[0052] The sole 3 is produced separately with respect to the lower shell 2 and is connected thereto by a relative second joint 120, whose axis L is still horizontal and orthogonal to the axis T of the first joint 110, but it is situated on a lower level, so that the sole 3 can tilt with respect to the lower shell 2 on a vertical plane, transversal to the boot S, perpendicular to the swinging plane of the bootleg 1.

[0053] The second joint 120 includes a pair of protrusions 121a, 121b, situated in front and behind the lower shell 2, and coupled with corresponding attachments 122a, 122b formed by the sole 3, by relative pins, not shown.

[0054] A membrane 14 can be situated between the lower shell 2 and the sole 3, in order to prevent the snow from entering the gap therebetween, and consequently to avoid the risk that the ice formation could prevent movement of the sole.

[0055] The effective necessity of the membrane will be checked by the practical tests conducted by an expert in the field.

[0056] The device 200 according to the second embodiment does not have the covering, because the circular sector with the relative guides and cursors is not necessary for guiding the bootleg swing motion, and the relative interconnection mechanism 300 for determining the sole 3 movement, likewise situated near the boot S outer side, is uncovered.

[0057] The mechanism 300 includes, e.g. a toggle, in which a first arm 301 is integral with the bootleg 1 and extends downwards, below the axis T of the first joint 110.

[0058] An end of a connecting rod 302 is hinged to the first arm 301, and the other end thereof is hinged to a corresponding wing 303 formed by the sole 3.

[0059] As it is shown with broken line in Figure 6, the forward tilting of the bootleg 1 causes a corresponding rotation of the first arm 301, which results in the raising of the wing 303 and consequently, in the rotation of the sole 3 on the pins of the second joint 120, such that the inner lateral side 3a of the sole 3 is at a lower level with respect to the relative outer lateral side 3b (Figure 8).

[0060] Since the movements of the arm 301 and of the wing 303 are on perpendicular planes, at least one of the constraints, by which the connecting rod 302 is hinged to these elements, can be advantageously of spherical type.

[0061] As it has already been mentioned in relation to the first embodiment, also in this case the movements of the mechanism 300 must be without clearances, for the already explained reasons.

[0062] Figures 9 and 9A show a rocker member 40, connected to the sole 3, in a housing 41 made preferably in the heel area.

[0063] At one of its ends, the rocker member 40 has formed thereon one or more conical push rods 42, turned upwards and aimed at entering, when the boot S is detached from the ski, corresponding recesses 44 made in

the lower shell 2, due to the action of a spring 43.

[0064] In this condition, (Figure 9), the sole 3 is fastened to the lower shell 2, allowing to walk in a more stable way, although the bootleg cannot swing.

[0065] When the boot is bound to the ski 90 (Figure 9A), an abutment 45 made in plate 91 of the rear binding 92, pushes the end of the rocker member 40, opposite to the push rods 42, thus disengaging the latter and bringing the boot S to the operation conditions, as programmed.

[0066] The practical use of a pair of boots S with carving skis, according to any of the two embodiments taken into consideration, allows to utilize the self-steering effect of the skis in order to perform turns very easily: keeping the skis parallel, at a certain distance one from the other, a sufficient support base is obtained and a good body balance stability is acquired.

[0067] With the forward bending of the limb outer to the turn to be taken, the skier imposes a tilting motion to the bootleg 1 and, due to what above, the transversal inclination of the respective ski, thus facilitating the gripping of the inner lamina, without the necessity of high speed, since the body inclination, in transversal direction, remains small.

[0068] The only use difference between the first and the second embodiment of the boots, lies in the fact that according to the first embodiment, the lower shell is inclined transversally with respect to the bootleg and consequently, the ankle must follow this movement, while according to the second embodiment, only the sole is inclined transversally and consequently, the ankle remains motionless.

[0069] As it is known, the ski outer with respect to the turn is more "loaded" by the body weight, thus the left boot, shown in the examples, will be decisive in the conduction of the turns to the right, and vice-versa for the right boot.

[0070] The ski, which from time to time is inner with respect to the turn, is suitably kept ahead of the other one, so as to maintain the bootleg 1 in a substantially vertical position, and consequently, with the device 100, 200 inactive, although the inner ski, being less loaded, has little effect on the trajectory and therefore, even an accidental small inclination in counter-step would not be too harmful.

[0071] A slalom is run by coordinating the weight change with the change of the forward bending of the tibia and the alternate movement of the skis, so that the inner one is ahead the outer one; these movements are simultaneous, almost consequent, thus they are extremely easy to perform, also at high speed, as well as harmonious to see.

[0072] Elastic and/or absorbing means, not shown, can be associated to the above described boots, according to both, first and second embodiment.

[0073] The elastic means are aimed at increasing the effort required to operate the mechanisms 30, 300 during the forward bending of the bootleg 1, and the absorbing means are aimed at stabilizing the position imposed to the sole 3 by the mechanisms, reducing return swing caused by the run irregularities.

[0074] The calibrating range of the elastic means and the absorbing means is preferably adjustable from a minimum to a maximum, chosen by the skier according to his/her weight, the conditions of the run and/or snow from among the values prefixed by the producer in sight of the results of suitable practical tests.

[0075] The above mentioned elastic means and absorbing means can be housed, e.g. in a position corresponding to the second hinge joint 20, 210, with suitable construction solutions of substantially known type.

[0076] The elastic means and absorbing means can also act as return for bringing the bootleg 1 back to the vertical position in absence of the limb and/or stresses, similar to what has been said in relation to the return means 115 of the first described embodiment, which in this case would be unnecessary and thus eliminated.

[0077] According to a constructive variant, not shown, the boot described as the first embodiment can have means for locking the device 100, which means can be operated manually by the skier, e.g. by a lever.

[0078] The locking means keep the bootleg 1 in a suitable position, so as to use it as a traditional boot.

[0079] With the boot described as the second embodiment, the same result can obtained simply by removing the abutment 45 from the rear binding, in order to prevent the unhooking of the push rods 42.

[0080] According to another variant, not shown, there can be means, operated manually, for releasing the swing movement of the bootleg 1 from the device 100, 200, which moves the sole 3 inclination, so as to walk easily, when the skis are removed, contrary to the traditional boots.

[0081] The advantages of the proposed boot result evident from the above description.

[0082] The proposed boot obtains all the objects mentioned in the introduction and can offer advantages for skiers of medium-beginner level, as well as of advanced level.

[0083] The undeniable bigger constructive complexity with respect to a traditional boot, can be reduced to a minimum by suitable industrialization studies, and likewise, the technical-functional needs can be surely resolved by the usual technologies and "know-how" of the field.

[0084] It is to be pointed out that the inner side of the boots, in both embodiments, has been maintained without protrusions and/or extensions, so as to avoid undesired difficulties, both with and without the skis.

[0085] Consequently, the proposed boot is a very "technical" element of the ski equipment, which is capable of interacting actively with the carving skis, in order to utilize at best their dynamic characteristics.

[0086] It is assumed that the cost increase with respect to the traditional boot, can be contained and surely justified by the offered advantages and consequently, it will

not be an obstacle to a positive market reaction.

Claims

1. Variable configuration ski boot, of the type including a bootleg (1), a lower shell (2), connected to the bootleg, and a sole (3), fastened to the lower shell, **characterized in that** it includes a device (100, 200), having: a first hinge joint (10, 110), which allows tilting motion of said bootleg (1) with respect to the related lower shell (2) on a horizontal axis (T), transversal to the boot (S) and situated at a level almost coinciding with the ankle articulation, when the foot (P) wears the boot (S); a second hinge joint (20, 120), having a horizontal axis (L) arranged perpendicular to the first one, and allowing swinging of said sole (3) with respect to the bootleg (1) on a plane orthogonal to the tilting of the latter; a mechanism (30, 300), operated by the tilting motion of said bootleg (1) with respect to said first joint (10, 110) and making said sole (3) swing with respect to said second joint (20, 120) with a prefixed angular ratio and in such a direction, that a forward swing of said bootleg (1) is corresponded by an inclination of the sole (3), which brings the inner lateral side (3a) of the latter to a lower level with respect to the related outer lateral side (3b).

2. Boot, as claimed in claim 1, **characterized in that** said sole (3) is separated from said lower shell (2), with the latter being fastened to said bootleg (1) bilaterally by said first hinge joint (110) and **in that** said sole (3) is articulated to said lower shell (2) by said second hinge joint (120), having its axis (L) at a lower level with respect to said axis (T) of said first joint (110) and including a pair of protrusions (121a, 121b), situated in front and behind said lower shell 2, and coupled with corresponding attachments (122a, 122b) formed by said sole (3), by relative pins.

3. Boot, as claimed in claim 1 or 2, **characterized in that** said mechanism (300) is situated in a position corresponding to the outer side of the boot (S) and includes a toggle, in which a first arm (301) is integral with the bootleg (1) and extends downwards, below said axis (T) of the first joint (110), with an end of a connecting rod (302) being hinged to the first arm (301), without clearance, and the other end thereof being hinged, without clearance, to a wing (303) formed by said sole (3), with said arm (301) being driven into rotation by said tilting motion of the bootleg (1) and causing the sole (3) inclination, by relative movements determined by said connecting rod (302) and wing (303).

4. Boot, as claimed in claim 3, **characterized in that** at least one of the constraints, fastening said connecting rod (302) to said arm (301) and wing (303), is of spherical type.

5. Boot, as claimed in claim 2, **characterized in that** a membrane (14) is situated between said lower shell (2) and said sole (3) for separating the gap between the lower shell and the sole from the outer environment.

6. Boot, as claimed in claim 2, **characterized in that** it includes a rocker member (40), connected to said sole (3) in the heel area, and having, at one of its ends, at least one conical push rod (42), turned upwards and aimed at entering, when the boot (S) is detached from the ski (90), a corresponding recess (44) made in said lower shell (2), due to the action of a spring (43), thus preventing swinging of said sole (3), which is resumed, when the boot is fastened to the ski (90), by the abutment (45) made in the ski rear binding (92), and pushing the other end of said rocker member (40), thus making it rotate sufficiently to disengage said conical push rod (42) from the related recess (44).

7. Boot, as claimed in claim 1, in which said sole (3) is integral with said lower shell (2), **characterized in that** said device (100) includes a rigid covering (101), which extends from the outer side of said boot (S) to the rear part thereof, to define: a circular sector (102), having at least two guides (103a, 103b), made therein and extending along relevant circumference arcs of different radius, concentric with said first joint (10), with corresponding cursors (104a, 104b) being engaged sliding with said guides (103a, 103b) and fastened to the outer side of said bootleg (1) and made integral, inside said covering (101), with an arm (105) pivoted on said first joint (10); a seat for said second hinge joint (20), situated in the rear part of said boot (S) and having its axis coplanar with said axis (T) of the first hinge joint (10), likewise almost coinciding with said ankle articulation, with said second joint (20) supporting, cantilevered thereto with possibility of tilting motion on a relevant axis (L), said lower shell (2) and the sole (3) fastened thereto.

8. Boot, as claimed in claim 1 or 7, **characterized in that** said mechanism (30) is housed inside said covering (101) and includes a double profile cam (31), keyed onto the pin (11) of said first hinge joint (10), integrally with said arm (105), with said cam (31) being engaged, without clearance, with the upper horizontal wall (32a) and the lower horizontal wall (32b) of a slot (32), made in a floating plate (33), hinged to a lever (34), which is arranged perpendicular to the cam (31) and plate (33) and radially integral with the pin (21) of said second joint (20), to which said lower shell (2) together with the sole (3), integral therewith, are fastened; said cam (31) being

set into rotation by swinging of said bootleg (1) and causing the inclination of the lower shell (2) together with the sole (3), integral therewith, due to the relative movements imposed to said plate (33), lever (34) and pin (21).

9. Boot, as claimed in claim 1 or 7, **characterized in that** it includes return elastic means (115), keeping said bootleg (1) in a more or less vertical position, if it is not subjected to any forces.

10. Boot, as claimed in claim 9, **characterized in that** said elastic means (115) include a pulling spring, whose one end is fastened to the arm (105) and whose other end is fastened to the covering (101).

11. Boot, as claimed in claim 1 or 2 or 7, **characterized in that** said bootleg (1) and lower shell (2) are joined, in the middle area, by a soft sleeve (4), which is made of heat insulating material, and which restores the continuity of the limb housing, defined by said bootleg (1) and lower shell (2).

12. Boot, as claimed in claim 1 or 2 or 7, **characterized in that** it includes elastic means, which contrast the tilting motion of said bootleg (1) with respect to said lower shell (2), to increase the effort required to operate the mechanisms (30, 300).

13. Boot, as claimed in claim 12, **characterized in that** it includes absorbing means, connected to said elastic means, to stabilize the position imposed to said sole (3) by the mechanisms (30, 300).

FIG.1

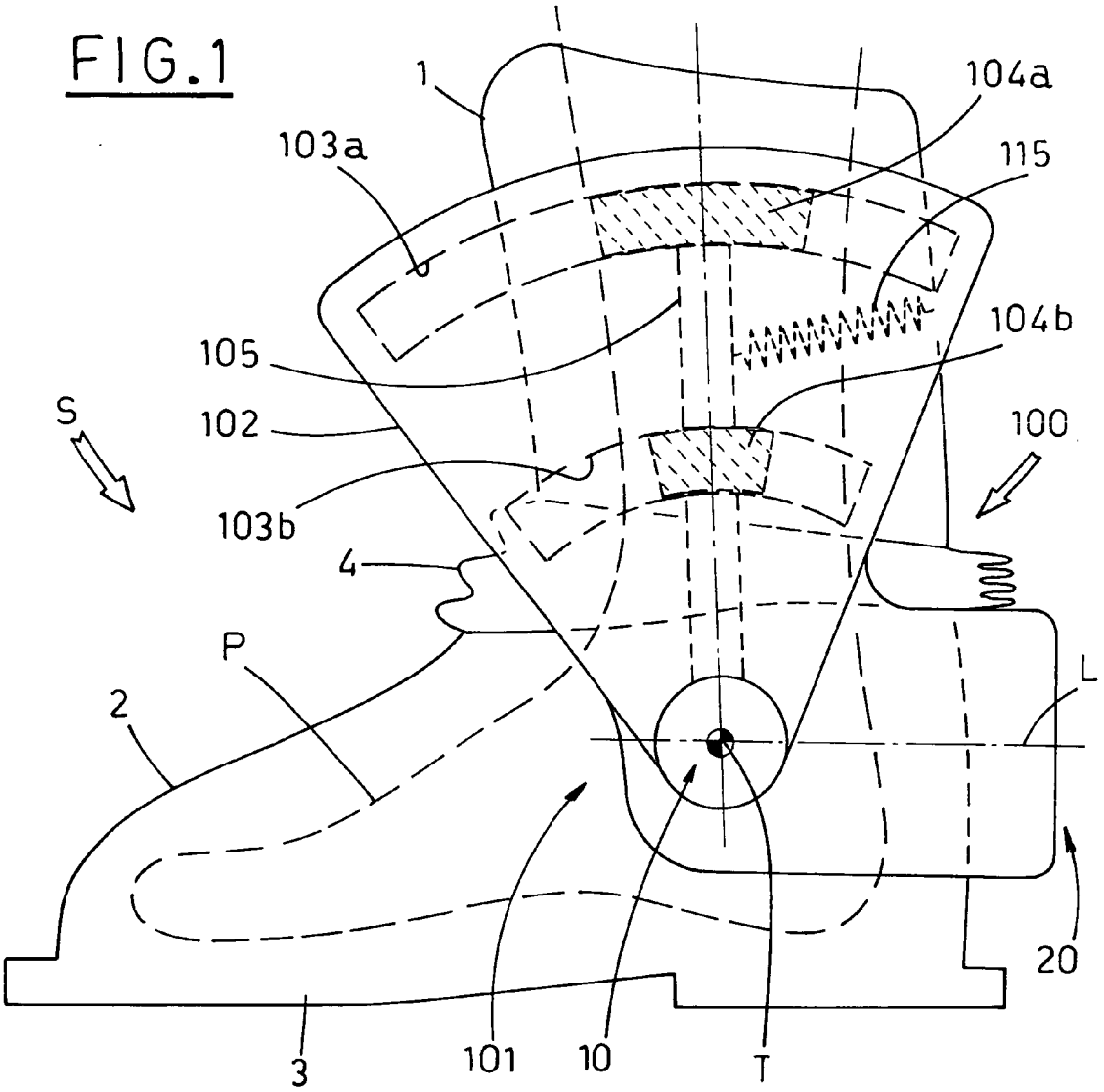


FIG.2A

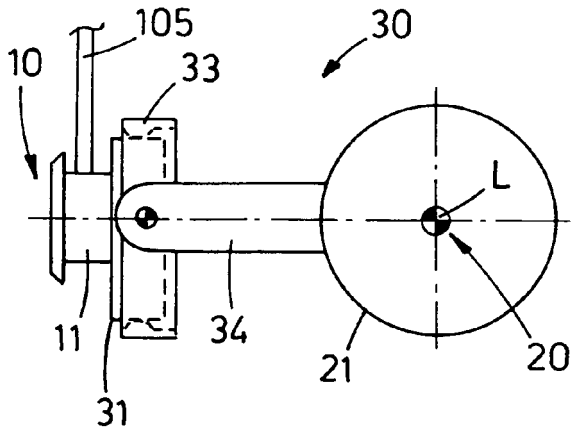
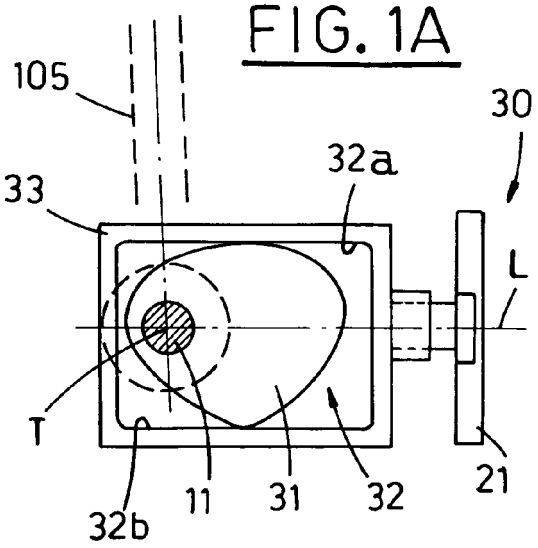


FIG.1A



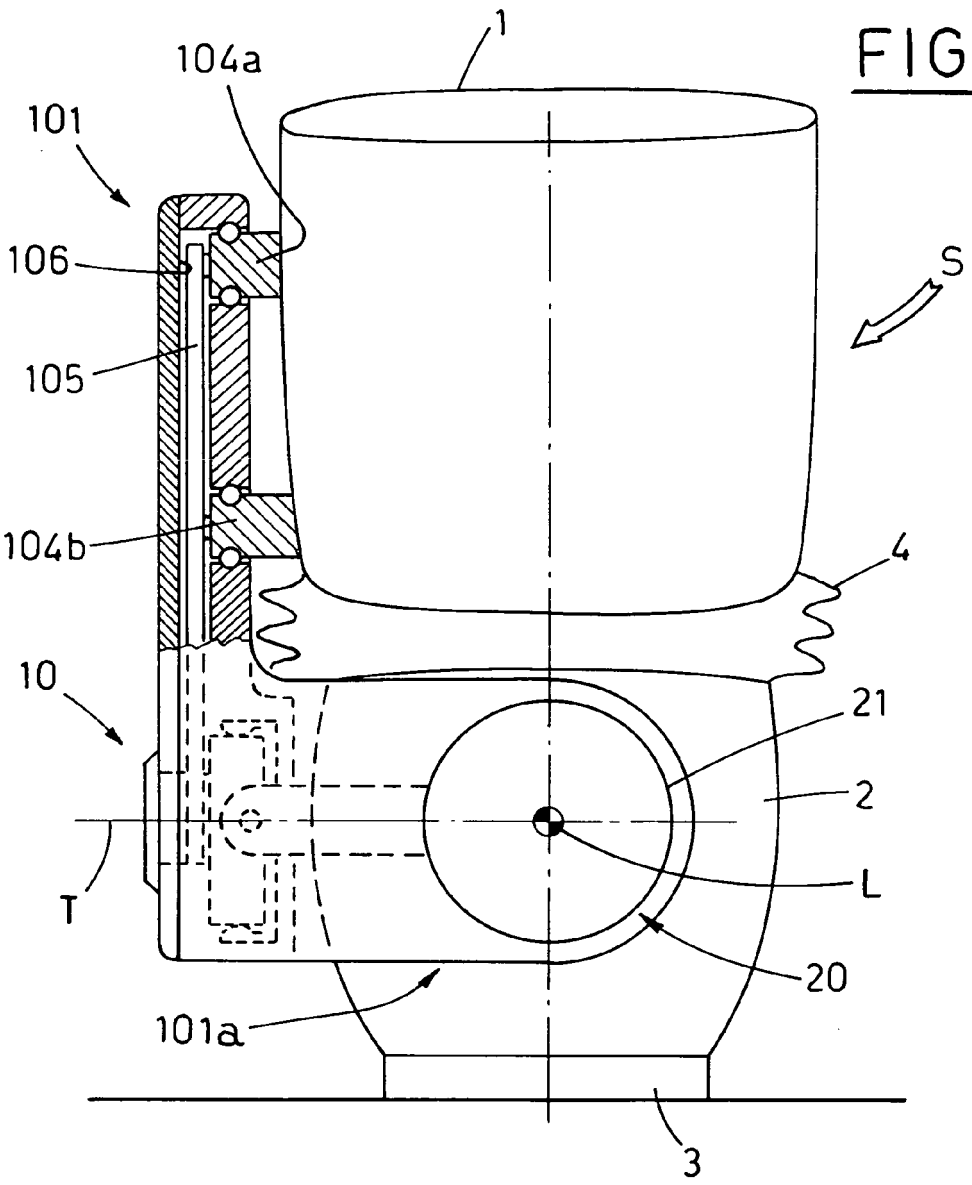
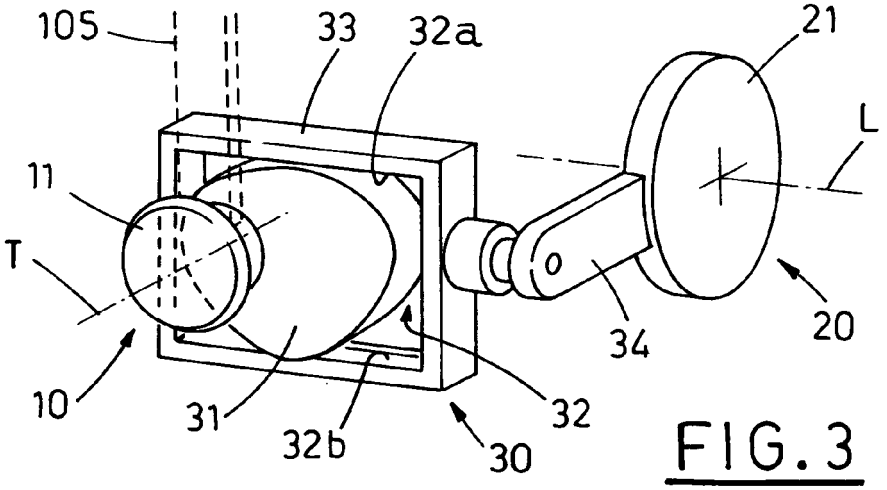

1
104a
101
106
S
105
104b
4
10
21
2
T
L
20
101a
3

FIG.2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33
32a
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L
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T
34
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10
31
32b
32
30

FIG.3

FIG.4

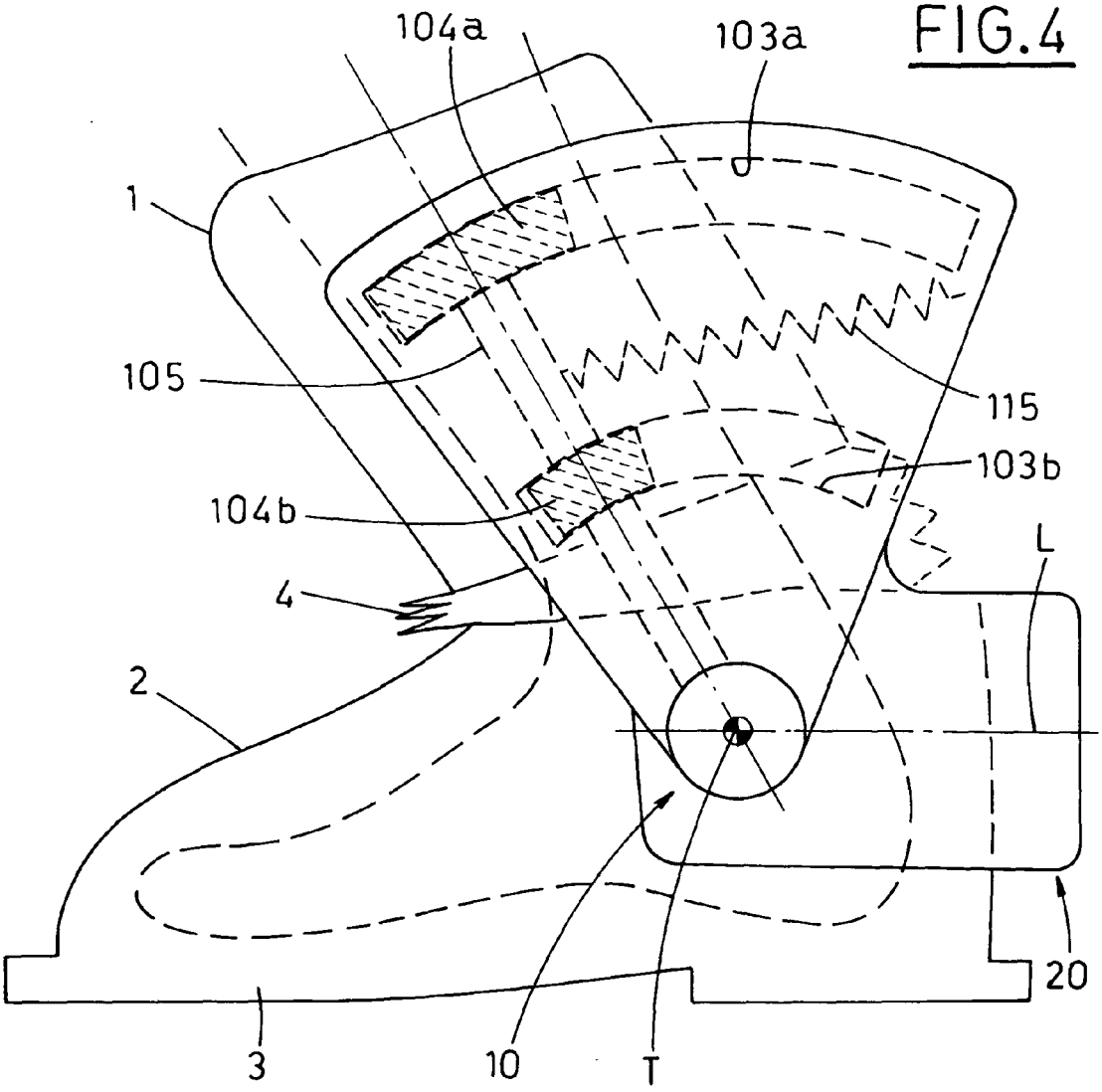


FIG.5A

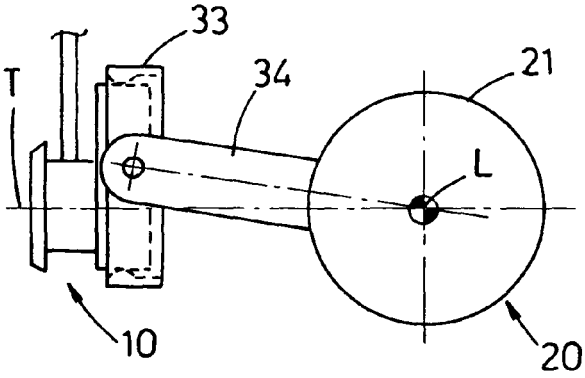
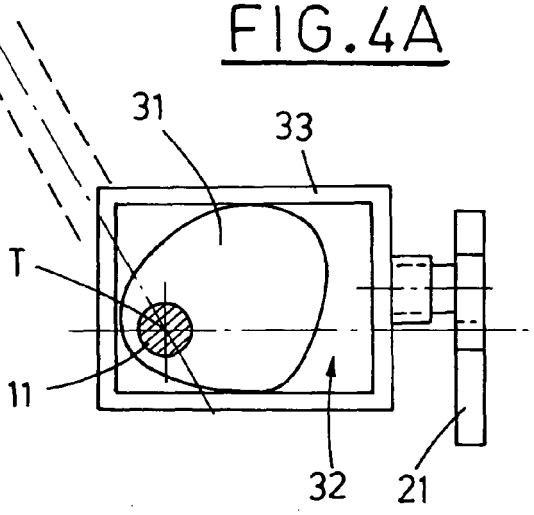


FIG.4A



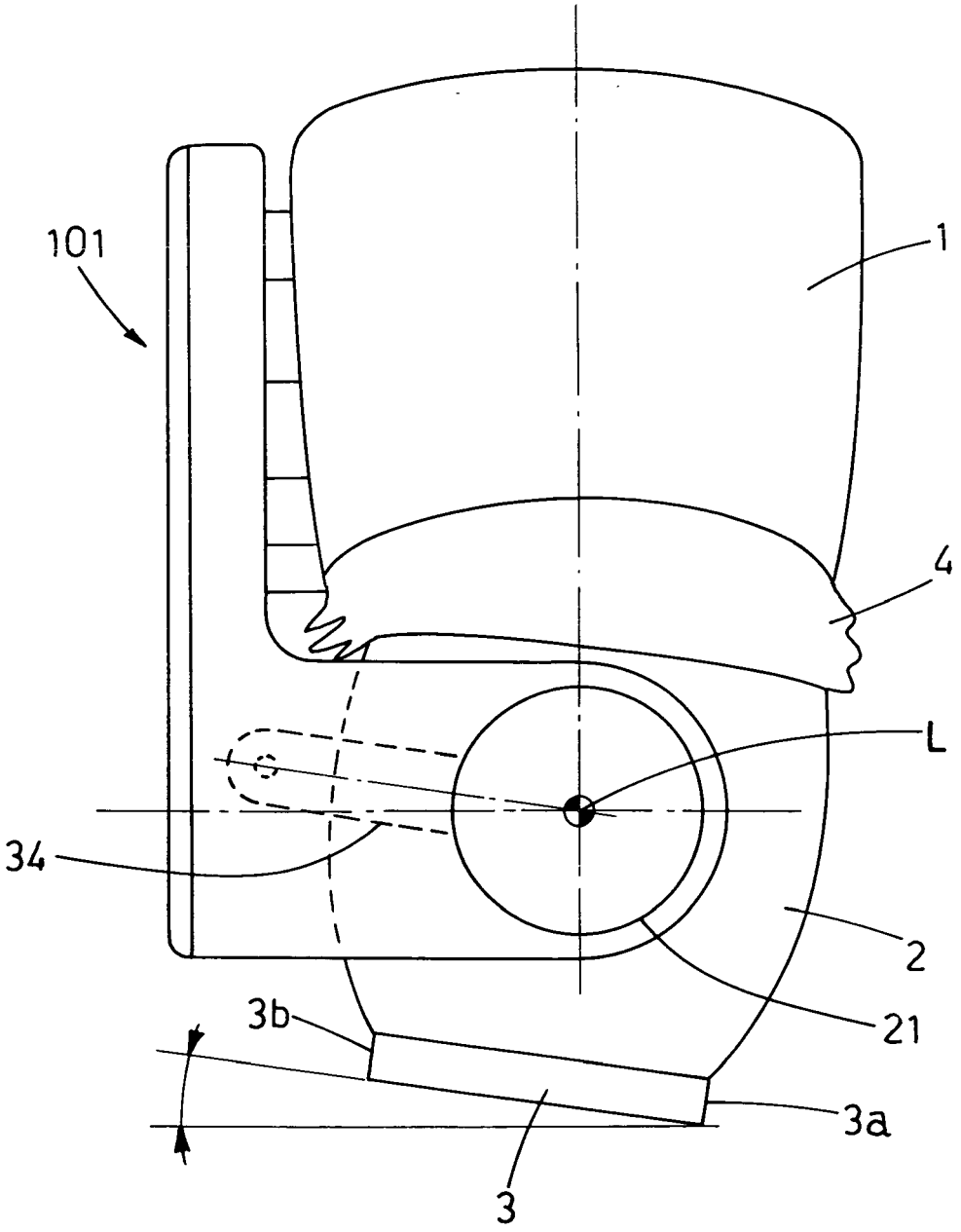


FIG.5

FIG.6

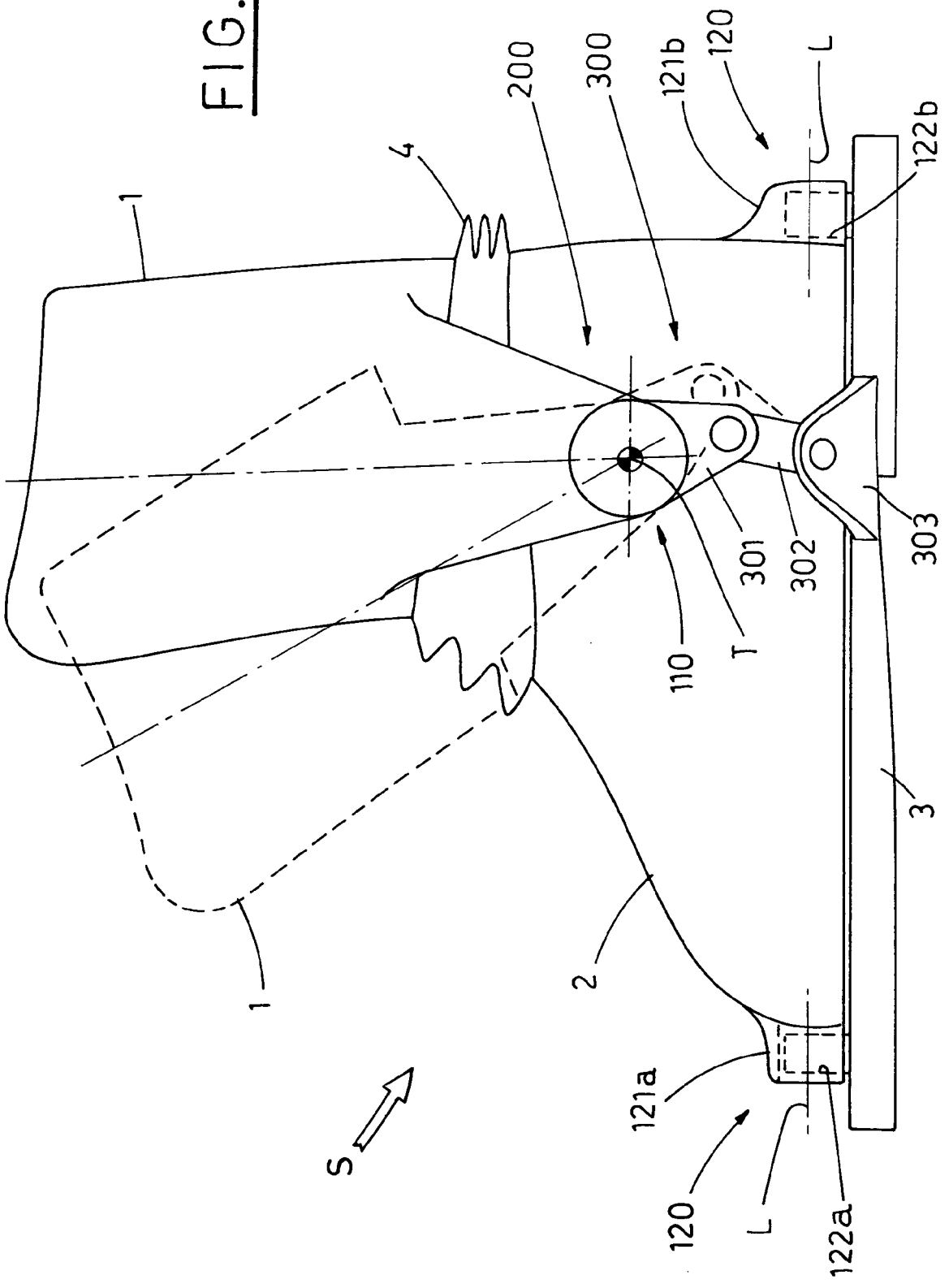
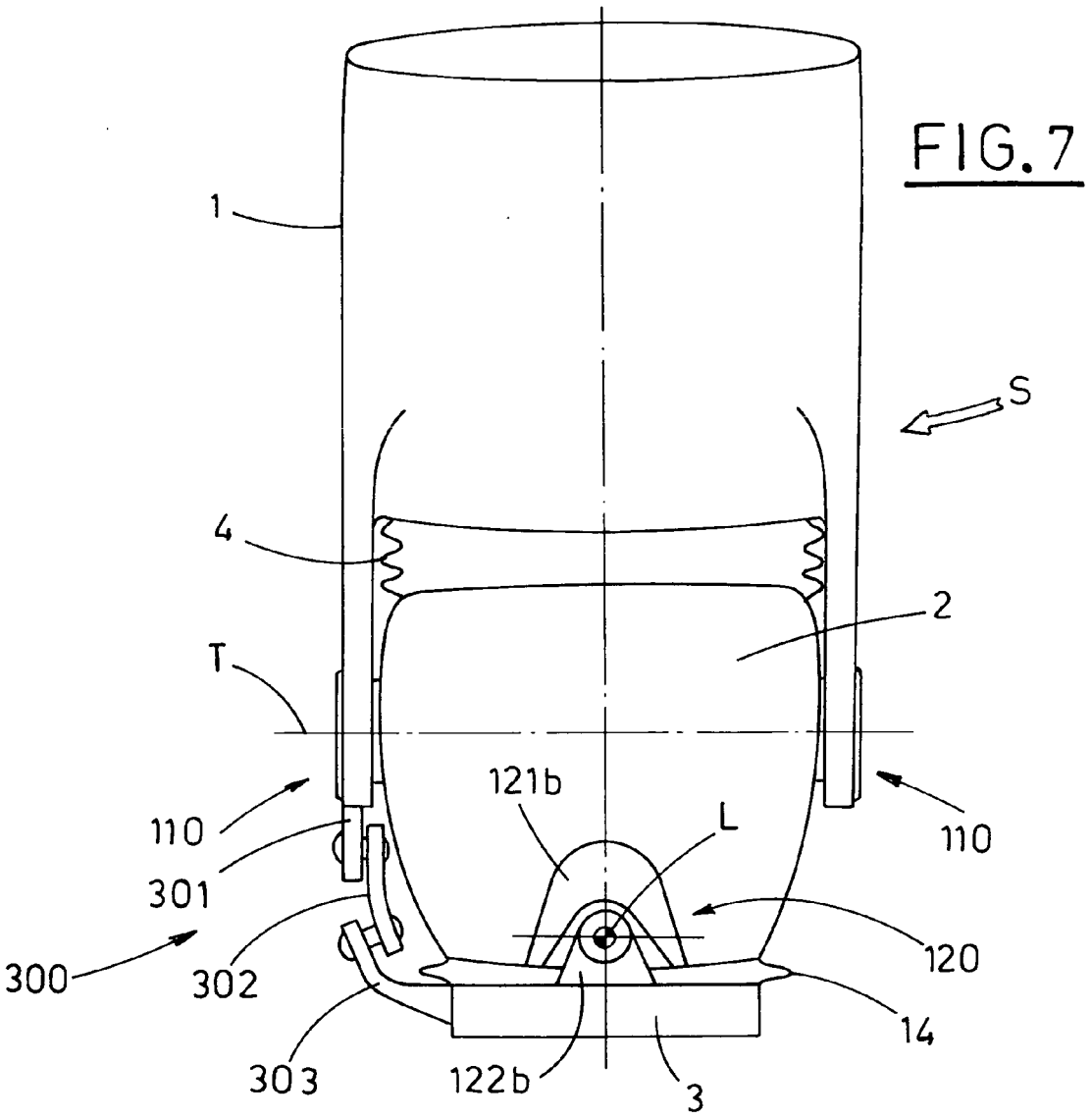


FIG. 7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2
T
121b
L
110
110
301
120
300
302
14
303
122b
3

FIG. 8

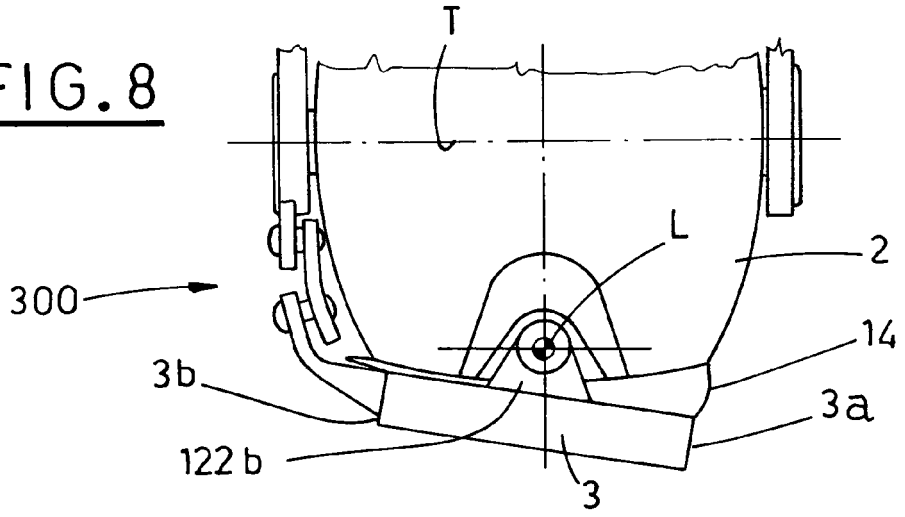

T
L
2
300
14
3b
3a
122b
3

FIG.9

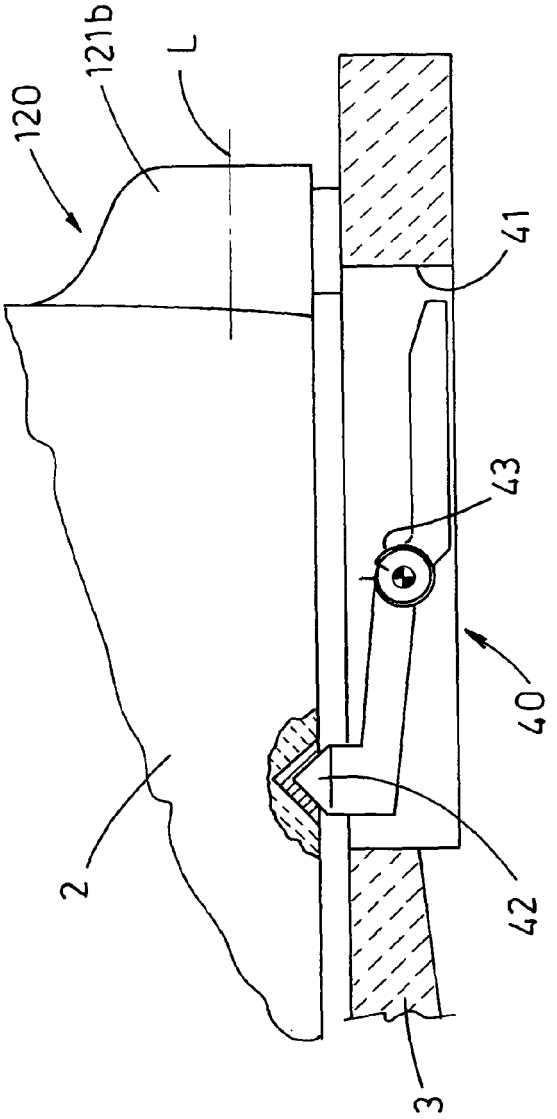
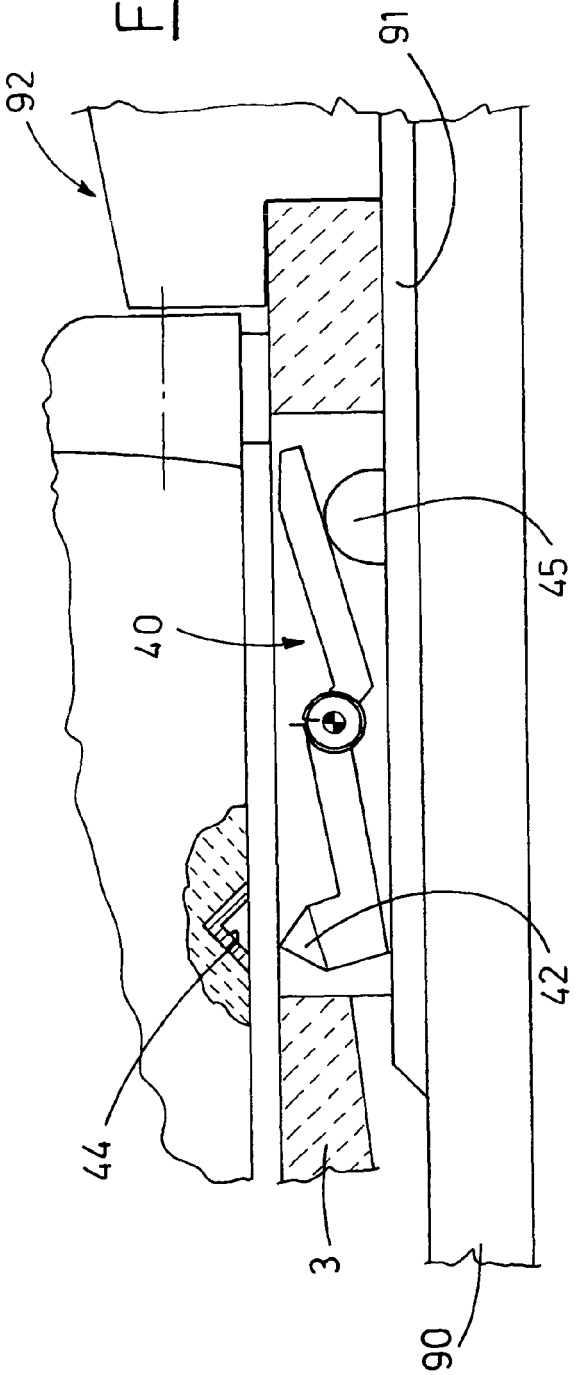


FIG.9A



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EUROPEAN SEARCH REPORT

Application Number
EP 05 01 9419

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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	16 November 2005	Cianci, S

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