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(54) **A TOE-PIECE OF A SKI MOUNTAINEERING BINDING**

ZEHENSTÜCK EINER SKITOURENBINDUNG

BUTÉE D'UNE FIXATION DE SKI ALPIN

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Description

[0001] The present invention relates to the technical sector concerning ski mountaineering bindings, with particular reference to a toe-piece of the ski binding.

[0002] A toe-piece of a ski mountaineering binding is known from EP2415504, which comprises: a base which is fixable to a ski; a first jaw and a second jaw which face one another and which are rotatable with respect to the base; a first pin which is borne by the first jaw for inserting in a first lateral hole fashioned in a tip of a ski boot; a second pin which is borne by the second jaw for inserting in a second lateral hole opposite the first lateral hole fashioned in the tip of the ski boot; an activating lever which is rotatable with respect to the base; a joint borne by the activating lever, which is interposed between the first jaw and the second jaw, and which is coupled to the first jaw and to the second jaw; a blocking lever which is rotatably coupled to the activating lever, and which comprises a first abutment; first elastic means acting on the first jaw, on the second jaw, on the joint and on the activating lever.

[0003] Further, the toe-piece of the ski mountaineering binding comprises a brake for a ski which: is borne by the base; comprises a braking portion which is movable to assume a braking position, so that when the toe-piece of the ski mountaineering binding is fixed to the ski the braking portion is lowered below the rest surface of the ski to drag on the layer of snow covering the terrain and thus brake the ski, and a non-active position, so that when the toe-piece of the ski mountaineering binding is fixed to the ski the braking portion is raised above the rest surface of the ski so as not to interfere with the layer of snow covering the terrain; it comprises an activating portion for activating the braking portion from the braking position towards the first non-active position.

[0004] The toe-piece of the ski mountaineering binding further comprises second elastic means acting on the braking portion, for exerting a force tending to bring the braking portion into the braking position.

[0005] The toe-piece of the ski mountaineering binding further comprises a braking lever which is connected to the activating portion of the brake, which is manually activatable to bring the braking portion into the non-active position, and which interacts with the first abutment. In particular, the braking lever can move between a first endrun position, which corresponds to the braking position of the braking portion, and a second endrun position, which corresponds to the non-active position of the braking portion.

[0006] The toe-piece of the ski mountaineering binding of known type is designed to assume following configurations:

a configuration ready to receive the ski boot, wherein the blocking lever is in an unblocked position and the braking lever is in the first endrun position in which the braking portion is in the braking position;

an intermediate configuration of inserted ski boot reachable starting from the configuration ready to receive the ski boot by hooking the ski boot in the toe-piece of the ski mountaineering binding, wherein: the blocking lever remains in the unblocked position, and the braking lever is in the first position;

a blocking ski boot configuration, reachable starting from the intermediate configuration of inserted ski boot activating the braking lever from the first endrun position to the second endrun position, so as to bring the braking portion of the brake into the non-active position, the blocking lever is in a blocking position which prevents the automatic unhooking of the ski boot;

a ski descent configuration, reachable starting from the intermediate configuration of inserted ski boot activating the braking lever from the first endrun position to the second endrun position, so as to bring the braking portion of the brake into the non-active position.

[0007] The above-described toe-piece of the ski mountaineering binding is designed in such a way, starting from the intermediate configuration of inserted ski boot, when the braking lever is activated, as to bring the braking portion of the brake into the non-active position, then the first abutment encounters the activating portion of the brake, thus bringing the braking portion into the non-active position against the elastic action of the second elastic means.

[0008] The above-mentioned toe-piece of a ski mountaineering binding is further designed in such a way that, starting from the ski descent configuration, when the ski boot unhooks from the toe-piece of the ski binding due to an overload during the ski descent or by acting on the activating lever, then the first abutment automatically disengages from the activating portion of the brake with the consequent movement of the braking portion into the braking position by the action of the second elastic means.

[0009] Alternatively, the ski descent configuration reachable starting from the configuration of ski boot blocking by returning the blocking lever into the unblocked position. Likewise, the blocking ski boot configuration is reachable starting from the ski descent configuration by returning the blocking lever into the blocking position.

[0010] Therefore, to ski uphill or downhill it is necessary to activate the braking lever manually in order to bring the braking portion from the braking position towards the non-active position, and in the case of unhooking, intentional or accidental due to an overload, of the ski boot from the toe-piece of the ski mountaineering binding then the braking portion remains in the braking position.

[0011] An aim of the present invention consists in making the use of the toe-piece of the ski mountaineering

binding simpler.

[0012] The above-mentioned aim is attained by a toe-piece of a ski mountaineering binding, according to claim 1.

[0013] The braking lever is advantageously no longer necessary to manually bring the braking portion of the brake into a non-active position: this aim is now automatically attained by the blocking lever, which when activated by the user, in turn activates the braking portion. Thus, to use the toe-piece of the ski mountaineering binding the user must act on a single lever, which is the blocking lever, which simplifies the use of a toe-piece of a ski mountaineering binding.

[0014] Specific embodiments of the invention will be described in the following part of the present description, according to what is set down in the claims and with the aid of the accompanying tables of drawings, in which:

- figures 1, 2 are respectively section and perspective views of a toe-piece of a ski mountaineering binding object of the present invention in a configuration ready to receive a ski boot, according to a first embodiment of the invention;
- figures 3, 4 are respectively the view of sections II-II and IV-IV of figure 1;
- figures 5, 6 are respectively section and perspective views of the toe-piece of the ski mountaineering binding of figures 1-2 in an inserted intermediate configuration of inserted ski boot;
- figures 7, 8 are respectively the view of sections VII-VII and VIII-VIII of figure 5;
- figures 9, 10 are respectively section and perspective views of the toe-piece of the ski mountaineering binding of figures 1-2 in a blocking ski boot configuration;
- figures 11, 12 are respectively the view of sections XI-XI and XII-XII of figure 9;
- figures 13, 14 are respectively section and perspective views of the toe-piece of the ski mountaineering binding of figures 1-2 in a ski descent configuration;
- figures 15, 16 are respectively the view of sections XV-XV and XVI-XVI of figure 13;
- figures 17, 18 are respectively section and perspective views of the toe-piece of the ski mountaineering binding of figures 1-2 when a ski boot detaches from the toe-piece of the ski mountaineering binding starting from the ski descent configuration;
- figures 19, 20 are respectively the view of sections XIX-XIX and XX-XXI of figure 17;

- figures 13A, 14A are respectively section and perspective views of a toe-piece of the ski mountaineering binding according to the present invention in a ski descent configuration, according to a second embodiment;

- figures 15A, 16A are respectively the view of sections A-A and B-B of figure 13A.

[0015] With reference to the appended tables of drawings, reference numeral (1) denotes in its entirety a toe-piece of the ski mountaineering binding according to the present invention, comprising:

a base (2) which is fixable to a ski (9) (schematically illustrated only in figure 3);

a first jaw (11) and a second jaw (12) which face one another and which are rotatable with respect to the base (2);

a first pin (21) which is borne by the first jaw (11) for inserting in a first lateral hole (not visible in the figures) made in a tip of a ski boot (3);

a second pin (22) which is borne by the second jaw (12) for inserting in a second lateral hole (not visible in the figures), opposite the first lateral hole, made in the tip of the ski boot (3);

an activating lever (4) which is rotatable with respect to the base (2);

a joint (5) borne by the activating lever (4), which is interposed between the first jaw (11) and the second jaw (12), and which is coupled to the first jaw (11) and to the second jaw (12);

a first abutment (31A);

a blocking lever (6) which is rotatably coupled to the activating lever (4), and which bears the first abutment (31A);

first elastic means (41) acting on the first jaw (11), on the second jaw (12), on the joint (5) and on the activating lever (4).

[0016] Further, the toe-piece of a ski mountaineering binding (1) comprises a brake (7) for a ski (9) which: is borne by the base (2); comprises a braking portion (13A) which is movable to assume a braking position (PF), so that when the toe-piece of the ski mountaineering binding (1) is fixed to the ski (9) the braking portion (13A) is lowered below the rest surface (10) of the ski (9) to drag on the layer of snow covering the terrain and thus brake the ski (9), and a first non-active position (PD1), so that when the toe-piece of the ski mountaineering binding (1) is fixed

to the ski (9) the braking portion (13A) is raised; it comprises an activating portion (14A) for activating the braking portion (13A) from the braking position (PF) towards the first non-active position (PD1).

[0017] Further, the toe-piece of the ski mountaineering binding (1) comprises second elastic means (as will be clarified in the following, a reference numeral has not been attributed to the second elastic means as in the figures they are incorporated in the brake (7) and are therefore not visible) acting on the braking portion (13A), for exerting a force tending to bring the braking portion (13A) into the braking position (PF).

[0018] The toe-piece of the ski mountaineering binding (1) is also designed to assume following configurations:

a configuration ready to receive the ski boot (A), wherein: the blocking lever (6) is in an unblocked position (PS), and the braking portion (13A) is in the braking position (PF);

an intermediate configuration of inserted ski boot (B) reachable starting from the configuration ready to receive the ski boot (A) by hooking the ski boot (3) in the toe-piece of the ski mountaineering binding (1), wherein: the blocking lever (6) remains in the unblocked position (PS), and the braking portion (13A) remains in the braking position (PF);

a configuration of ski boot blocking (C), reachable starting from the intermediate configuration of inserted ski boot (B), wherein: the first abutment (31A) abuts the activating portion (14A) of the brake (7), thus maintaining the braking portion (13A) of the brake (7) in the first non-active position (PD1);

a ski descent configuration (D) reachable starting from the configuration of ski boot blocking (C) by returning the blocking lever (6) into the unblocked position (PS).

[0019] Further, the toe-piece of the ski mountaineering binding (1) comprises a second abutment (32) which is borne by the activating lever (4).

[0020] The braking portion (13A) is movable to assume a second non-active position (PD2), so that when the toe-piece of the ski mountaineering binding (1) is fixed to the ski (9) the braking portion (13A) is raised.

[0021] The brake (7) for a ski (9) comprises an abutment portion (15A).

[0022] The toe-piece of a ski mountaineering binding (1) further comprises: a third abutment (33A) for abutting the abutment portion (15A) of the brake (7); a carriage (8) which is movable with respect to the base (2), which comprises a track (16) for sliding of the second abutment (32) and which bears the third abutment (33A); and third elastic means (43) acting on the carriage (8).

[0023] Further, the toe-piece of the ski mountaineering binding (1) is designed in such a way as:

to reach the configuration of ski boot blocking (C) starting from the intermediate configuration of inserted ski boot (B) it is sufficient to bring the blocking lever (6) into a blocking position (PB) which prevents the automatic unhooking of the ski boot (3);

starting from the intermediate configuration of inserted ski boot (B), when the blocking lever (6) is activated to reach the blocking position (PB) the first abutment (31A) encounters the activating portion (14A) of the brake (7) thus bringing the braking portion (13A) into the first non-active position (PD1);

in the ski descent configuration (D): the first abutment (31A) is disengaged from the activating portion (14A) of the brake (7); the abutment portion (15A) of the brake (7) encounters the third abutment (33A); and the braking portion (13A) of the brake (7) is in the second non-active position (PD2);

starting from the configuration of ski boot blocking, when the blocking lever (6) is activated to reach the unblocked position (PS) the first abutment (31A) disengages from the activating portion (14A) of the brake (7), with the consequence that the abutment portion (15A) of the brake (7) abuts the third abutment (33A) thus bringing the braking portion (13A) into the second non-active position (PD2) by way of the elastic action of the second elastic means;

starting from the ski descent configuration (D), when the ski boot (3) unhooks from the toe-piece of the ski binding (9) due to an overload during the ski descent or by acting on the blocking lever (6), then the second abutment (32) moves along the track (16) of the carriage (8) thus determining a movement of the carriage (8) against the action of the third elastic means (43) up to provoking disengagement of the third abutment (33A) of the carriage (8) from the abutment portion (15A) of the brake (7) and the consequent movement of the braking portion (13A) into the braking position (PF) by the action of the second elastic means.

[0024] In the first non-active position (PD1) and in the second non-active position (PD2) the braking portion (13A) is preferably located above the rest surface (10) of the ski (9) so as not to interfere with the layer of snow covering the terrain.

[0025] In a first embodiment, illustrated in figures 1-20 with the exception of 13A, 14A, 15A, 16A, the toe-piece of a ski mountaineering binding (1) is designed in such a way that the ski descent configuration (D) is only reachable starting from the configuration of ski boot blocking (C). This means that to ski uphill or downhill it is necessary always to first shift the blocking lever into the blocking position: in this way it is advantageously possible to systematically verify whether the first pin and the second pin

insert correctly in the lateral holes of the ski boot, i.e. if the ski boot is well hooked to the toe-piece of the ski mountaineering binding. In the toe-pieces of ski mountaineering bindings of the prior art, such as for example the one described in EP2415504, the user had to habitually acquire this good practice him or herself, by remembering that on each use of the toe-piece of the ski mountaineering binding it was necessary to priorly shift the toe-piece of the ski mountaineering binding into the configuration of ski boot blocking. The user however frequently forgot, which caused a safety risk.

[0026] According to a second embodiment, that can be derived from a first embodiment of the invention and therefore illustrated only with reference to the ski descent configuration, see figures 13A, 14A, 15A, 16A, the toe-piece of a ski mountaineering binding (1) is designed in such a way that the ski descent configuration (D) is also reachable starting from the intermediate configuration of inserted ski boot (B), by moving the blocking lever (6) towards the blocking position (PB) until the first abutment (31A) abuts the activating portion (14A) of the brake (7) thus bringing, in turn, the braking portion (13A) into the second non-active position (PD2).

[0027] The first non-active position (PD1) and in the second non-active position (PD2) can coincide with one another (solution not shown in the figures).

[0028] The first jaw (11) and the second jaw (12) are preferably rotoidally coupled to the base (2) so as to rotate with respect to rotation axes that are parallel to the axis of the ski (9).

[0029] The activating lever (4) is preferably rotatably coupled to the base (2) so as to rotate with respect to the perpendicular axis to the axis of the ski (9).

[0030] The activating lever (4) preferably rotatably couples to the base (2) at a first intermediate portion (17) of the activating lever (4), so that a first arm (51) of activating lever (4) and a second arm (52) of activating lever (4) are defined; the first arm (51) of activating lever (4) couples with the joint (5) and the second arm (52) of activating lever (4) rotatably couples with the blocking lever (6); the blocking lever (6) rotatably couples to the activating lever (4) at a second intermediate portion (18) of the blocking lever (6), so that a first arm (61) of blocking lever (6) and a second arm (62) of blocking lever (6) are defined; the first arm (61) of blocking lever (6) bears the first abutment (31A) and the second arm (62) of blocking lever (6) forms a grip (19) for manual activation of the blocking lever (6).

[0031] The first arm (51) of activating lever (4) can couple with the joint (5) at the free end thereof, and the second arm (52) of activating lever (4) can rotatably couple with the blocking lever (6) at the free end thereof.

[0032] The first abutment (31A) can be arranged at the free end of the first arm (61) of blocking lever (6).

[0033] The blocking lever (6) is preferably rotatably coupled to the activating lever (4) so as to rotate with respect to the activating lever (4) with respect to a perpendicular axis to the ski (9).

[0034] The first abutment (31A) is preferably a first roll-

ing element which is rotatably coupled to the blocking lever (6) and which laterally projects from the blocking lever (6). The first rolling element is preferably a roller.

[0035] The first abutment (31A) (variant not illustrated) can also be an integral part of the blocking lever (6), being for example in a single body with the blocking lever (6).

[0036] The first elastic means (41) can preferably comprise a first pair of springs (71) which is interposed between the first jaw (11) and the joint (5) and a second pair of springs (72) which is interposed between the second jaw (12) and the joint (5), as illustrated in the figures. Alternatively, the first elastic means can also comprise only one of the above-mentioned pairs of springs, as taught in EP2815794, or comprise a single spring arranged between the joint and the activating lever, as taught in EP2659940.

[0037] The brake (7) for the ski (9) is preferably in a single body, is coupled to the base (2) and is wire-shaped, in the sense that it extends along the relative axis; the relative section can be cylindrical. The activating portion (14A) of the brake (7) can be a straight portion orientated along the axis of the ski (9); the abutment portion (15A) of the brake (7) can be a straight portion arranged transversally with respect to the axis of the ski (9), for example arranged perpendicularly with respect to the axis of the ski (9). The abutment portion (15A) of the brake (7) can be interposed between the activating portion (14A) of the brake (7) and the braking portion (13A). An intermediate connecting portion (150A) can be interposed between the braking portion (13A) and the abutment portion (15A), as is visible in the figures.

[0038] The brake (7) for the ski (9) preferably has a shape such (see the figures) as to incorporate the second elastic means. Alternatively (in a variant that is not illustrated), the second elastic means comprise an external spring, for example a torsion spring, which is applied to the brake (7) for skis (9).

[0039] The third elastic means (43) are preferably interposed between the carriage (8) and the base (2) and are designed to return the carriage (8) towards the base (2).

[0040] The second abutment (32) preferably comprises an appendage (32A) which extends towards the carriage (8).

[0041] The second abutment (32) preferably comprises a second rolling element (32B) which is rotatably coupled to the free end of the appendage (32A) to slidably engage in the track (16) of the carriage (8). The second rolling element (32B) is preferably a roller.

[0042] The third abutment (33A) of the carriage (8) preferably comprises a third rolling element which is rotatably coupled to the carriage (8). The third rolling element is preferably a roller.

[0043] The carriage (8) preferably comprises a first housing (81); the first housing (81) constitutes an end of the track (16) of the carriage (8); the toe-piece of the ski mountaineering binding (1) is designed in such a way that the second abutment (32) is in the first housing (81)

when the toe-piece of the ski mountaineering binding (1) is in the configuration ready to receive the ski boot (3).

[0044] The carriage (8) preferably comprises a second housing (82A) for receiving the abutment portion (15A) of the brake (7) when the toe-piece of the ski mountaineering binding (1) reaches the configuration of ski boot blocking starting from the intermediate configuration of inserted ski boot (B).

[0045] The toe-piece of the ski mountaineering binding (1) can comprise a fourth abutment (34) which is borne by the blocking lever (6); the base (2) can comprise a seat (20) for receiving the fourth abutment (34) when the blocking lever (6) assumes the blocking position (PB). The fourth abutment (34) can comprise a rolling element, for example a roller.

[0046] The toe-piece of a ski mountaineering binding (1) preferably has a plane of symmetry which is parallel to the axis of the ski (9), for which the following are comprised: a further braking portion (13B) of the brake (7), a further activating portion (14B) of the brake (7), a further abutment portion (15B) of the brake (7), a further intermediate connecting portion (150B) of the brake (7), a further second housing (82B) (not clearly visible in the figures, see figures 2, 18), a further first abutment (31B), and a further third abutment (33B). The characteristics of each of these just-introduced elements are the same as those identically-named and already discussed in the foregoing: for example the characteristics of the further first abutment (31B) are the same as discussed above for the first abutment (31A), and so on. In this case too, the brake (7) is preferably in a single body, is coupled to the base (2) at several points. In the example illustrated in the drawings the brake (7) comprises a central portion (23) which is anchored in a niche (24) made in the base (2); further, the intermediate connecting portion (150A) of the brake (7) and the further intermediate connecting portion (150B) of the brake (7) both pass through respective lateral through-holes (25) made in the base (2). The third elastic means (43) preferably comprise two traction springs.

[0047] There follows a functional description of the toe-piece of a ski mountaineering binding (1) according to a first embodiment with a plan of symmetry illustrated in figures 1-20 with the exception of figures 13A, 14A, 15A, 16A.

[0048] Figures 1-4 show the toe-piece of the ski mountaineering binding (1) in the configuration ready to receive the ski boot (A). The blocking lever (6) is in an unblocked position (PS), and the braking portion (13A) and the further braking portion (13B) are in the braking position (PF). The second abutment (32) is in the first housing (81) of the carriage (8) and the carriage (8) is moved away from the base (2) (figure 3), notwithstanding the action exerted by the third elastic means (43).

[0049] If the ski boot (3) is hooked in the toe-piece of the ski mountaineering binding (1) then the toe-piece of the ski mountaineering binding (1) moves into the intermediate configuration of inserted ski boot (B), as illus-

trated in figures 5-8. The consequent rotation of the activating lever (4) (compare for example figures 3 and 7) has caused the exit of the second abutment (32) from the first housing (81) of the carriage (8), which has in turn caused the nearing of the carriage (8) to the base (2) (compare figures 3 and 7 once more) by the action of the third elastic means (43). The blocking lever (6) has not been activated and thus remains in the unblocked position (PS). The braking portion (13A) and the further braking portion (13B) also remain in the braking position (PF).

[0050] By shifting the blocking lever (6) into the blocking position (PB), the toe-piece of the ski mountaineering binding (1) reaches the blocking ski boot configuration (C), see figures 9-12. During the rotation of the blocking lever (6): the first abutment (31A) and the further first abutment (31B) respectively about the activating portion (14A) of the brake (7) and the further activating portion (14B) of the brake (7), bringing the braking portion (13B) of the brake (7) and the further braking portion (13B) of the brake (7) into the first non-active position (PD1); the abutment portion (15A) of the brake (7) encounters the third abutment (33A) and the further abutment portion (15B) of the brake (7) encounters the further third abutment (33B) (this temporary step has not been illustrated in the drawings but can be intuited by comparing figures 8 and 12 with one another), with a consequent momentaneous moving away of the carriage (8) against the action of the third elastic means (43) until the abutment portion (15A) of the brake (7) passes beyond the third abutment (33A), moving beneath the further third abutment (33A) (and thus reaching the second housing (82A)), and the further abutment portion (15B) of the brake (7) passes beyond the further third abutment (33B), moving beneath the further third abutment (33A) (and thus reaching the further second housing (82B)). Once the rotation of the blocking lever (6) has terminated, the blocking lever (6) having thus reached the blocking position (PB), the first abutment (31A) and the further first abutment (31B) continue to respectively about the activating portion (14A) of the brake (7) and the further activating portion (14B) of the brake (7), thus guaranteeing that the braking portion (13B) of the brake (7) and the further braking portion (13B) of the brake (7) remain in the first non-active position (PD1). The abutment portion (15A) of the brake (7) is in the second housing (82A) (figure 12) and the further abutment portion (15B) of the brake (7) is located in the further second housing (82B).

[0051] If at this point the blocking lever (6) returns into the unblocked position (PS) the toe-piece of the ski mountaineering binding (1) reaches the ski descent configuration (D), see figures 13-16. As can be seen in figure 16, the movement of the blocking lever (6) determines the unhooking of the first abutment (31A) and the further first abutment (31B) respectively from the activating portion (14A) of the brake (7) and the further activating portion (14B) of the brake (7): as a consequence, the action exerted by the second elastic means is such that the abutment portion (15A) of the brake (7) and the further

abutment portion (15B) of the brake (7) abut respectively the third abutment (33A) and the further third abutment (33B), so that the braking portion (13A) and the further braking portion (13B) reach the second non-active position (PD2). In particular, the abutment portion (15A) of the brake (7) and the further abutment portion (15B) of the brake (7) are located beneath, respectively, the third abutment (33A) and the further third abutment (33B).

[0052] Thereafter, an unhooking of the ski boot (3) from the toe-piece of the ski mountaineering binding (1), due to an overload during the ski descent, or by acting on the blocking lever (6), causes the following effects: the activating lever (4) rotates (in a clockwise direction if a comparison is made between figures 15 and 19); then the second abutment (32) enters into contact with the track (16) of the carriage (8) and slides along the track (16) of the carriage (8): consequently, the carriage (8) is thus moved away from the base (2) notwithstanding the opposite action exerted by the third elastic means (43); therefore, the third abutment (33A) and the further third abutment (33B) disengage respectively from the abutment portion (15A) of the brake (7) and from the further abutment portion (15B) of the brake (7); lastly, the braking portion (13A) of the brake (7) and the further braking portion (13B) of the brake (7) reach the braking position (PF) due to the action exerted by the second elastic means. The ski (9) is thus braked. Figures 17-20 illustrate an instant during the unhooking, with the activating lever (4) tending to rotate (as mentioned, in a clockwise direction if a comparison is made between figures 15 and 19) to bring the toe-piece of the toe-piece of the ski mountaineering binding (1) towards the configuration ready to receive the ski boot (A). After the unhooking of the first jaw (11) and the second jaw (12), the jaws can be moved away from one another with the toe-piece of the ski mountaineering binding (1) having newly reached the configuration ready to receive the ski boot (A). Alternatively, after the unhooking of the first jaw (11) and the second jaw (12), the jaws can be neared to one another in an "outrun" position, not illustrated: in that case, to bring the toe-piece of the ski binding (9) towards the configuration ready to receive the ski boot (A) the user simply has to activate the blocking lever (6).

[0053] The second embodiment is differentiated from the first embodiment only due to the fact that the toe-piece of the ski mountaineering binding is able to reach the ski descent configuration (D) also starting from the intermediate configuration of inserted ski boot (B). In this case it is sufficient to shift the blocking lever (6) towards the blocking position (PB) (but without reaching the blocking position (PB), see figure 15A in which the fourth abutment (34) has not reached the seat (20); so the blocking lever (6) is effectively still in the unblocked position (PS)) until the first abutment (31A) and the further first abutment (31B) respectively abut the activating portion (14A) of the brake (7) and the further activating portion (14B) of the brake (7), bringing the braking portion (13B) of the brake (7) and the further braking portion (13B) of the brake (7)

into the second non-active position (PD2), see figure 16A. During this partial rotation of the blocking lever (6) (compare figures 7, 15A and figures 8, 16A) the abutment portion (15A) of the brake (7) encounters the third abutment (33A) and the further abutment portion (15B) of the brake (7) encounters the further third abutment (33B), with a consequent momentaneous moving away of the carriage (8) (as mentioned, not illustrated) against the action of the third elastic means (43) until the abutment portion (15A) of the brake (7) passes beyond the third abutment (33A), moving beneath the further third abutment (33A) (but without thereafter reaching, by virtue of the partial rotation of the blocking lever (6), the second housing (82A)), and the further abutment portion (15B) of the brake (7) passes beyond the further third abutment (33B), moving beneath the further third abutment (33A) (but without thereafter reaching, by virtue of the partial rotation of the blocking lever (6), the further second housing (82B)).

[0054] It is understood that the above has been described by way of non-limiting example and that any constructional variants are considered to fall within the protective scope of the present technical solution, as claimed in the following.

Claims

1. A toe-piece of a ski mountaineering binding (1), comprising:
 - a base (2) which is fixable to a ski (9);
 - a first jaw (11) and a second jaw (12) which face one another and which are rotatable with respect to the base (2);
 - a first pin (21) which is borne by the first jaw (11) for inserting in a first lateral hole made in a tip of a ski boot (3);
 - a second pin (22) which is borne by the second jaw (12) for inserting in a second lateral hole, opposite the first lateral hole, made in the tip of the ski boot (3);
 - an activating lever (4) which is rotatable with respect to the base (2);
 - a joint (5) borne by the activating lever (4), which is interposed between the first jaw (11) and the second jaw (12), and which is coupled to the first jaw (11) and to the second jaw (12);
 - a first abutment (31A);
 - a blocking lever (6) which is rotatably coupled to the activating lever (4), and which bears the first abutment (31A);
 - first elastic means (41) acting on the first jaw (11), on the second jaw (12), on the joint (5) and on the activating lever (4);
 - a brake (7) for a ski (9) which: is borne by the base (2); comprises a braking portion (13A) which is movable to assume a braking position

(PF), so that when the toe-piece of the ski mountaineering binding (1) is fixed to the ski (9) the braking portion (13A) is lowered below the rest surface (10) of the ski (9) to drag on the layer of snow covering the terrain and thus brake the ski (9), and a first non-active position (PD1), so that when the toe-piece of the ski mountaineering binding (1) is fixed to the ski (9) the braking portion (13A) is raised; it comprises an activating portion (14A) for activating the braking portion (13A) from the braking position (PF) towards the first non-active position (PD1); second elastic means acting on the braking portion (13A), for exerting a force tending to bring the braking portion (13A) into the braking position (PF); the toe-piece of the ski mountaineering binding (1) being designed to assume following configurations:

a configuration ready to receive the ski boot (A), wherein: the blocking lever (6) is in an unblocked position (PS), and the braking portion (13A) is in the braking position (PF); an intermediate configuration of inserted ski boot (B) reachable starting from the configuration ready to receive the ski boot (A) by hooking the ski boot (3) in the toe-piece of the ski mountaineering binding (1), wherein: the blocking lever (6) remains in the unblocked position (PS), and the braking portion (13A) remains in the braking position (PF); a configuration of ski boot blocking (C), reachable starting from the intermediate configuration of inserted ski boot (B), wherein: the first abutment (31A) abuts the activating portion (14A) of the brake (7), thus maintaining the braking portion (13A) of the brake (7) in the first non-active position (PD1); a ski descent configuration (D) reachable starting from the configuration of ski boot blocking (C) by returning the blocking lever (6) into the unblocked position (PS);

characterised in that:

it comprises a second abutment (32) which is borne by the activating lever (4); the braking portion (13A) is movable to assume a second non-active position (PD2), so that when the toe-piece of the ski mountaineering binding (1) is fixed to the ski (9) the braking portion (13A) is raised; the brake (7) for a ski (9) comprises an abutment portion (15A);

it comprises a third abutment (33A) for abutting the abutment portion (15A) of the brake (7);

it comprises a carriage (8) which is movable with respect to the base (2), which comprises a track (16) for sliding of the second abutment (32) and which bears the third abutment (33A);

it comprises third elastic means (43) acting on the carriage (8);

it is designed in such a way as to reach the configuration of ski boot blocking (C) starting from the intermediate configuration of inserted ski boot (B) it is sufficient to bring the blocking lever (6) into a blocking position (PB) which prevents the automatic unhooking of the ski boot (3);

it is designed in such a way that, starting from the intermediate configuration of inserted ski boot (B), when the blocking lever (6) is activated to reach the blocking position (PB) the first abutment (31A) encounters the activating portion (14A) of the brake (7) thus bringing the braking portion (13A) into the first non-active position (PD1);

it is designed in such a way that in the ski descent configuration (D): the first abutment (31A) is disengaged from the activating portion (14A) of the brake (7); the abutment portion (15A) of the brake (7) encounters the third abutment (33A); and the braking portion (13A) of the brake (7) is in the second non-active position (PD2);

it is designed in such a way that, starting from the configuration of ski boot blocking, when the blocking lever (6) is activated to reach the unblocked position (PS) the first abutment (31A) disengages from the activating portion (14A) of the brake (7), with the consequence that the abutment portion (15A) of the brake (7) abuts the third abutment (33A) thus bringing the braking portion (13A) into the second non-active position (PD2) by way of the elastic action of the second elastic means;

it is designed in such a way that, starting from the ski descent configuration (D), when the ski boot (3) unhooks from the toe-piece of the ski binding (9) due to an overload during the ski descent or by acting on the blocking lever (6), then the second abutment (32) moves along the track (16) of the carriage (8) thus determining a movement of the car-

riage (8) against the action of the third elastic means (43) up to provoking disengagement of the third abutment (33A) of the carriage (8) from the abutment portion (15A) of the brake (7) and the consequent movement of the braking portion (13A) into the braking position (PF) by the action of the second elastic means.

2. The toe-piece of a ski mountaineering binding (1) of claim 1, which is designed in such a way that the ski descent configuration (D) is only reachable starting from the configuration of ski boot blocking (C).
3. The toe-piece of a ski mountaineering binding (1) of claim 1, which is designed in such a way that the ski descent configuration (D) is also reachable starting from the intermediate configuration of inserted ski boot (B), by moving the blocking lever (6) towards the blocking position (PB) until the first abutment (31A) abuts the activating portion (14A) of the brake (7) thus bringing, in turn, the braking portion (13A) into the second non-active position (PD2).
4. The toe-piece of a ski mountaineering binding (1) of any one of the preceding claims, wherein: the activating lever (4) rotatably couples to the base (2) at a first intermediate portion (17) of the activating lever (4), so that a first arm (51) of activating lever (4) and a second arm (52) of activating lever (4) are defined; the first arm (51) of activating lever (4) couples with the joint (5) and the second arm (52) of activating lever (4) rotatably couples with the blocking lever (6); the blocking lever (6) rotatably couples to the activating lever (4) at a second intermediate portion (18) of the blocking lever (6), so that a first arm (61) of blocking lever (6) and a second arm (62) of blocking lever (6) are defined; the first arm (61) of blocking lever (6) bears the first abutment (31A) and the second arm (62) of blocking lever (6) forms a grip (19) for manual activation of the blocking lever (6).
5. The toe-piece of a ski mountaineering binding (1) of any one of the preceding claims, wherein the first abutment (31A) is a first rolling element which is rotatably coupled to the blocking lever (6) and which laterally projects from the blocking lever (6).
6. The toe-piece of a ski mountaineering binding (1) of any one of the preceding claims, wherein the brake (7) for the ski (9) is in a single body, is coupled to the base (2) and is wire-shaped.
7. The toe-piece of a ski mountaineering binding (1) of any one of the preceding claims, wherein the third elastic means (43) are interposed between the carriage (8) and the base (2) and are designed to return

the carriage (8) towards the base (2).

8. The toe-piece of a ski mountaineering binding (1) of any one of the preceding claims, wherein the second abutment (32) comprises an appendage (32A) which extends towards the carriage (8).
9. The toe-piece of a ski mountaineering binding (1) of the preceding claim, wherein the second abutment (32) comprises a second rolling element (32B) which is rotatably coupled to the free end of the appendage (32A) to slidably engage in the track (16) of the carriage (8).
10. The toe-piece of a ski mountaineering binding (1) of any one of the preceding claims, wherein the third abutment (33A) of the carriage (8) comprises a third rolling element which is rotatably coupled to the carriage (8).
11. The toe-piece of a ski mountaineering binding (1) of any one of the preceding claims, wherein: the carriage (8) comprises a first housing (81); the first housing (81) constitutes an end of the track (16) of the carriage (8); the toe-piece of the ski mountaineering binding (1) is designed in such a way that the second abutment (32) is in the first housing (81) when the toe-piece of the ski mountaineering binding (1) is in the configuration ready to receive the ski boot (3).
12. The toe-piece of a ski mountaineering binding (1) of any one of the preceding claims, wherein the carriage (8) comprises a second housing (82A) for receiving the abutment portion (15A) of the brake (7) when the toe-piece of the ski mountaineering binding (1) reaches the configuration of ski boot blocking starting from the intermediate configuration of inserted ski boot (B).

Patentansprüche

1. Vorderbacken einer Skitourenbindung (1), umfassend:
 - eine Basis (2), die an einem Ski (9) befestigbar ist;
 - eine erste Backe (11) und eine zweite Backe (12), die einander zugewandt sind und die relativ zu der Basis (2) drehbar sind;
 - einen ersten Stift (21), der von der ersten Backe (11) getragen wird, zum Einführen in ein erstes seitliches Loch, das in einer Spitze eines Skischuhs (3) ausgebildet ist;
 - einen zweiten Stift (22), der von der zweiten Backe (12) getragen wird, zum Einführen in ein zweites seitliches Loch, das dem ersten seitlichen Loch gegenüberliegt, das in der Spitze des

Skischuhs (3) ausgebildet ist; einen Betätigungshebel (4), der relativ zu der Basis (2) drehbar ist;
 ein vom Betätigungshebel (4) getragenes Gelenk (5), das zwischen der ersten Backe (11) und der zweiten Backe (12) angeordnet ist, und das mit der ersten Backe (11) und der zweiten Backe (12) verbunden ist;
 ein erstes Widerlager (31A);
 einen Blockierungshebel (6), der drehbar mit dem Betätigungshebel (4) verbunden ist und der das erste Widerlager (31A) trägt;
 erste elastische Mittel (41), die auf die erste Backe (11), auf die zweite Backe (12), auf das Gelenk (5) und auf den Betätigungshebel (4) wirken;
 eine Bremse (7) für einen Ski (9), die von der Basis (2) getragen wird; die einen Bremsabschnitt (13A) umfasst, der bewegbar ist, um eine Bremsstellung (PF) einzunehmen, so dass, wenn der Vorderbacken der Skitourenbindung (1) am Ski (9) befestigt ist, der Bremsabschnitt (13A) auf eine Höhe unterhalb der Auflagefläche (10) des Skis (9) abgesenkt wird, so dass er auf der den Boden bedeckenden Schneeschicht schleift und somit den Ski (9) bremst, und um eine erste nichtaktive Stellung (PD1) einzunehmen, so dass, wenn der Vorderbacken der Skitourenbindung (1) am Ski (9) befestigt ist, der Bremsabschnitt (13A) angehoben wird; und die einen Betätigungsabschnitt (14A) umfasst, um den Bremsabschnitt (13A) zu betätigen, damit er sich von der Bremsstellung (PF) in die erste nichtaktive Stellung (PD1) bewegt;
 zweite elastische Mittel, die auf den Bremsabschnitt (13A) wirken, um eine Kraft auszuüben, die bestrebt ist, den Bremsabschnitt (13A) in die Bremsstellung (PF) zu bringen;
 wobei der Vorderbacken der Skitourenbindung (1) dafür ausgelegt ist, die folgenden Konfigurationen einzunehmen:

eine Konfiguration der Bereitschaft zur Aufnahme des Skischuhs (A), in der: sich der Blockierungshebel (6) in einer entblockierten Stellung (PS) befindet, und sich der Bremsabschnitt (13A) in der Bremsstellung (PF) befindet;
 eine Zwischenkonfiguration mit eingeführtem Skischuh (B), die ausgehend von der Konfiguration der Bereitschaft zur Aufnahme des Skischuhs (A) erreicht werden kann, indem der Skischuh (3) in den Vorderbacken der Skitourenbindung (1) eingehakt wird, in der: der Blockierungshebel (6) in der entblockierten Stellung (PS) bleibt und der Bremsabschnitt (13A) in der Bremsstellung (PF) bleibt;

eine Konfiguration zum Blockieren des Skischuhs (C), die ausgehend von der Zwischenkonfiguration mit eingeführtem Skischuh (B) erreicht werden kann, in der: das erste Widerlager (31A) gegen den Betätigungsabschnitt (14A) der Bremse (7) anschlägt und somit den Bremsabschnitt (13A) der Bremse (7) in der ersten nichtaktiven Stellung (PD1) hält;
 eine Skiabfahrtskonfiguration (D), die ausgehend von der Konfiguration zum Blockieren des Skischuhs (C) erreicht werden kann, indem der Blockierungshebel (6) zurück in die entblockierte Stellung (PS) gebracht wird;
dadurch gekennzeichnet, dass:

er ein zweites Widerlager (32) umfasst, das von dem Betätigungshebel (4) getragen wird;
 der Bremsabschnitt (13A) bewegbar ist, um eine zweite nichtaktive Stellung (PD2) einzunehmen, so dass, wenn der Vorderbacken der Skitourenbindung (1) am Ski (9) befestigt ist, der Bremsabschnitt (13A) angehoben ist;
 die Bremse (7) für einen Ski (9) einen Anschlagabschnitt (15A) umfasst;
 er ein drittes Widerlager (33A) zum Anschlagen gegen den Anschlagabschnitt (15A) der Bremse (7) umfasst;
 er einen Schlitten (8) umfasst, der relativ zu der Basis (2) bewegbar ist, der eine Schiene (16) für das Gleiten des zweiten Widerlagers (32) umfasst und der das dritte Widerlager (33A) trägt;
 er dritte elastische Mittel (43) umfasst, die auf den Schlitten (8) wirken;
 er derart gestaltet ist, dass es, um die Konfiguration zum Blockieren des Skischuhs (C) ausgehend von der Zwischenkonfiguration mit eingeführtem Skischuh (B) einzunehmen, ausreichend ist, den Blockierungshebel (6) in eine Blockierstellung (PB) zu bringen, die das automatische Aushaken des Skischuhs (3) verhindert;
 er derart gestaltet ist, dass, ausgehend von der Zwischenkonfiguration mit eingeführtem Skischuh (B), wenn der Blockierungshebel (6) betätigt wird, um die Blockierstellung (PB) einzunehmen, das erste Widerlager (31A) gegen den Betätigungsabschnitt (14A) der Bremse (7) trifft und somit den Bremsabschnitt (13A) in die erste nichtaktive Stellung (PD1) bringt;
 er derart gestaltet ist, dass in der Skiabfahrtskonfiguration (D): das erste Wi-

derlager (31A) von dem Betätigungsabschnitt (14A) der Bremse (7) ausgerückt ist; der Anschlagabschnitt (15A) der Bremse (7) gegen das dritte Widerlager (33A) trifft; und der Bremsabschnitt (13A) der Bremse (7) sich in der zweiten nichtaktiven Stellung (PD2) befindet;

er derart gestaltet ist, dass, ausgehend von der Konfiguration zum Blockieren des Skischuhs (C), wenn der Blockierungshebel (6) betätigt wird, um die entblockierte Stellung (PS) einzunehmen, das erste Widerlager (31A) von dem Betätigungsabschnitt (14A) der Bremse (7) ausgerückt wird, mit der Folge, dass der Anschlagabschnitt (15A) der Bremse (7) gegen das dritte Widerlager (33A) anschlägt und somit den Bremsabschnitt (13A) in die zweite nichtaktive Stellung (PD2) bringt, durch die elastische Wirkung der zweiten elastischen Mittel;

er derart gestaltet ist, dass, ausgehend von der Skiabfahrtkonfiguration (D), wenn der Skischuh (3) aufgrund einer Überlastung während der Skiabfahrt oder durch Betätigung des Blockierungshebels (6) von dem Vorderbacken der Skitourenbindung (1) ausgehakt wird, das zweite Widerlager (32) sich entlang der Schiene (16) des Schlittens (8) bewegt und somit eine Bewegung des Schlittens (8) entgegen der Wirkung der dritten elastischen Mittel (43) bewirkt, bis hin zum Bewirken des Ausrückens des dritten Widerlagers (33A) des Schlittens (8) aus dem Anschlagabschnitt (15A) der Bremse (7) und der daraus folgenden Bewegung des Bremsabschnitts (13A) in die Bremsstellung (PF) durch Wirkung der zweiten elastischen Mittel.

2. Vorderbacken einer Skitourenbindung (1) nach Anspruch 1, der derart gestaltet ist, dass die Skiabfahrtkonfiguration (D) nur ausgehend von der Konfiguration zum Blockieren des Skischuhs (C) erreichbar ist.
3. Vorderbacken einer Skitourenbindung (1) nach Anspruch 1, der derart gestaltet ist, dass die Skiabfahrtkonfiguration (D) auch ausgehend von der Zwischenkonfiguration mit eingeführtem Skischuh (B) erreichbar ist, indem der Blockierungshebel (6) in die Blockierstellung (PB) bewegt wird, bis das erste Widerlager (31A) gegen den Betätigungsabschnitt (14A) der Bremse (7) anschlägt und somit wiederum den Bremsabschnitt (13A) in die zweite nichtaktive

Stellung (PD2) bringt.

4. Vorderbacken einer Skitourenbindung (1) nach einem der vorhergehenden Ansprüche, wobei: der Betätigungshebel (4) an einem ersten Zwischenabschnitt (17) des Betätigungshebels (4) drehbar mit der Basis (2) gekoppelt wird, so dass ein erster Arm (51) des Betätigungshebels (4) und ein zweiter Arm (52) des Betätigungshebels (4) definiert werden; wobei der erste Arm (51) des Betätigungshebels (4) mit dem Gelenk (5) gekoppelt wird und der zweite Arm (52) des Betätigungshebels (4) drehbar mit dem Blockierungshebel (6) gekoppelt wird; wobei der Blockierungshebel (6) an einem zweiten Zwischenabschnitt (18) des Blockierungshebels (6) drehbar mit dem Betätigungshebel (4) gekoppelt wird, so dass ein erster Arm (61) des Blockierungshebels (6) und ein zweiter Arm (62) des Blockierungshebels (6) definiert werden; wobei der erste Arm (61) des Blockierungshebels (6) das erste Widerlager (31A) trägt und der zweite Arm (62) des Blockierungshebels (6) einen Griff (19) für die händische Betätigung des Blockierungshebels (6) bildet.
5. Vorderbacken einer Skitourenbindung (1) nach einem der vorhergehenden Ansprüche, wobei das erste Widerlager (31A) ein erstes Rollelement ist, das drehbar mit dem Blockierungshebel (6) gekoppelt ist und das seitlich von dem Blockierungshebel (6) hervorragt.
6. Vorderbacken einer Skitourenbindung (1) nach einem der vorhergehenden Ansprüche, wobei die Bremse (7) für den Ski (9) einteilig ausgeführt ist, mit der Basis (2) gekoppelt ist und drahtförmig ist.
7. Vorderbacken einer Skitourenbindung (1) nach einem der vorhergehenden Ansprüche, wobei die dritten elastischen Mittel (43) zwischen dem Schlitten (8) und der Basis (2) angeordnet und dafür ausgelegt sind, den Schlitten (8) zur Basis (2) zurück zu bewegen.
8. Vorderbacken einer Skitourenbindung (1) nach einem der vorhergehenden Ansprüche, wobei das zweite Widerlager (32) einen Fortsatz (32A) umfasst, der sich zum Schlitten (8) hin erstreckt.
9. Vorderbacken einer Skitourenbindung (1) nach dem vorhergehenden Anspruch, wobei das zweite Widerlager (32) ein zweites Rollelement (32B) umfasst, das drehbar mit dem freien Ende des Fortsatzes (32A) gekoppelt ist, um gleitbar mit der Schiene (16) des Schlittens (8) in Eingriff zu gelangen.
10. Vorderbacken einer Skitourenbindung (1) nach einem der vorhergehenden Ansprüche, wobei das dritte Widerlager (33A) des Schlittens (8) ein drittes Rol-

lement umfasst, das drehbar mit dem Schlitten (8) gekoppelt ist.

11. Vorderbacken einer Skitourenbindung (1) nach einem der vorhergehenden Ansprüche, wobei: der Schlitten (8) ein erstes Gehäuse (81) umfasst; wobei das erste Gehäuse (81) ein Ende der Schiene (16) des Schlittens (8) bildet; wobei der Vorderbacken der Skitourenbindung (1) derart gestaltet ist, dass sich das zweite Widerlager (32) in dem ersten Gehäuse (81) befindet, wenn der Vorderbacken der Skitourenbindung (1) in der Konfiguration der Bereitschaft zur Aufnahme des Skischuhs (A) ist. 5
12. Vorderbacken einer Skitourenbindung (1) nach einem der vorhergehenden Ansprüche, wobei der Schlitten (8) ein zweites Gehäuse (82A) zur Aufnahme des Anschlagabschnitts (15A) der Bremse (7) umfasst, wenn der Vorderbacken der Skitourenbindung (1) die Konfiguration zum Blockieren des Skischuhs (C) ausgehend von der Zwischenkonfiguration mit eingeführtem Skischuh (B) erreicht. 10 15 20

Revendications 25

1. Une butée d'une fixation de ski de randonnée (1), comprenant :
 - une base (2) qui peut être fixée à un ski (9) ; 30
 - une première mâchoire (11) et une deuxième mâchoire (12) qui sont l'une en face de l'autre et qui peuvent tourner par rapport à la base (2) ;
 - une première broche (21) qui est portée par la première mâchoire (11) pour s'insérer dans un premier trou latéral réalisé dans la pointe d'une chaussure de ski (3) ; 35
 - une deuxième broche (22) qui est portée par la deuxième mâchoire (12) pour s'insérer dans un deuxième trou latéral, opposé au premier trou latéral, réalisé dans la pointe de la chaussure de ski (3) ; 40
 - un levier d'actionnement (4) qui peut être tourné par rapport à la base (2) ;
 - une articulation (5) portée par le levier d'actionnement (4), qui est interposée entre la première mâchoire (11) et la deuxième mâchoire (12), et qui est accouplée avec la première mâchoire (11) et avec la deuxième mâchoire (12) ; 45
 - une première butée (31A) ; 50
 - un levier de blocage (6) qui est accouplé de façon rotative avec le levier d'actionnement (4), et qui porte la première butée (31A) ;
 - des premiers moyens élastiques (41) agissant sur la première mâchoire (11), sur la deuxième mâchoire (12), sur l'articulation (5) et sur le levier d'actionnement (4) ; 55
 - un frein (7) pour un ski (9) qui : est porté par la

base (2) ; comprend une portion de freinage (13A) qui est mobile pour prendre une position de freinage (PF), de manière à ce que, lorsque la butée de la fixation de ski de randonnée (1) est fixée au ski (9), la portion de freinage (13A) est abaissée en dessous de la surface d'appui (10) du ski (9) pour traîner sur la couche de neige recouvrant le terrain et donc freiner le ski (9), et une première position non active (PD1), de manière à ce que, lorsque la butée de la fixation de ski de randonnée (1) est fixée au ski (9), la portion de freinage (13A) est levée; et comprend une portion d'actionnement (14A) pour actionner la portion de freinage (13A) de la portion de freinage (PF) vers la première position non active (PD1);
des deuxièmes moyens élastiques agissant sur la portion de freinage (13A), pour exercer une force ayant tendance à amener la portion de freinage (13A) dans la position de freinage (PF) ; la butée de la fixation de ski de randonnée (1) étant conçue pour prendre des configurations suivantes :

une configuration prête à recevoir la chaussure de ski (A), dans laquelle : le levier de blocage (6) est dans une position débloquée (PS), et la portion de freinage (13A) est dans la position de freinage (PF) ;
une configuration intermédiaire de chaussure de ski insérée (B) qui peut être atteinte à partir de la configuration prête à recevoir la chaussure de ski (A) en accrochant la chaussure de ski (3) dans la butée de la fixation de ski de randonnée (1), dans laquelle : le levier de blocage (6) reste dans la position débloquée (PS), et la portion de freinage (13A) reste dans la position de freinage (PF) ;
une configuration de blocage de la chaussure de ski (C), qui peut être atteinte à partir de la configuration intermédiaire de chaussure de ski insérée (B), dans laquelle : la première butée (13A) rencontre la portion d'actionnement (14A) du frein (7), maintenant ainsi la portion de freinage (13A) du frein (7) dans la première position non active (PD1) ;
une configuration de descente en ski (D) qui peut être atteinte à partir de la configuration de blocage de la chaussure de ski (C) en ramenant le levier de blocage (6) dans la position débloquée (PS) ;
caractérisée en ce que :

elle comprend une deuxième butée (32) qui est portée par le levier d'actionnement (4) ;

la portion de freinage (13A) est mobile pour prendre une deuxième position non active (PD2), de manière à ce que, lorsque la butée de la fixation de ski de randonnée (1) est fixée au ski (9), la portion de freinage (13A) est levée ;
 le frein (7) pour un ski (9) comprend une portion de butée (15A) ;
 elle comprend une troisième butée (33A) pour rencontrer la portion de butée (15A) du frein (7) ;
 elle comprend un chariot (8) qui est mobile par rapport à la base (2), qui comprend une piste (16) pour le coulisement de la deuxième butée (32) et qui porte la troisième butée (33A) ;
 elle comprend des troisièmes moyens élastiques (43) agissant sur le chariot (8) ;
 elle est conçue de manière à ce que, pour atteindre la configuration de blocage de la chaussure de ski (C) à partir de la configuration intermédiaire de chaussure de ski insérée (B), il suffit d'amener le levier de blocage (6) dans une position de blocage (PB) qui empêche le décrochage automatique de la chaussure de ski (3) ;
 elle est conçue de manière à ce que, à partir de la configuration intermédiaire de chaussure de ski insérée (B), lorsque le levier de blocage (6) est actionné pour atteindre la position de blocage (PB), la première butée (31A) rencontre la portion d'actionnement (14A) du frein (7) amenant ainsi la portion de freinage (13A) dans la première position non active (PD1) ;
 elle est conçue de manière à ce que dans la configuration de descente en ski (D) : la première butée (31A) est désengagée de la portion d'actionnement (14A) du frein (7) ; la portion de butée (15A) du frein (7) rencontre la troisième butée (33A) ; et la portion de freinage (13A) du frein (7) est dans la deuxième position non active (PD2) ;
 elle est conçue de manière à ce que, à partir de la configuration de blocage de la chaussure de ski (C), lorsque le levier de blocage (6) est actionné pour atteindre la position débloquée (PS), la première butée (31A) se désengage de la portion d'actionnement (14A) du frein (7), avec pour conséquence que la portion de butée (15A) du frein (7) rencontre la troisième butée (33A) amenant ainsi la portion de freinage (13A) dans

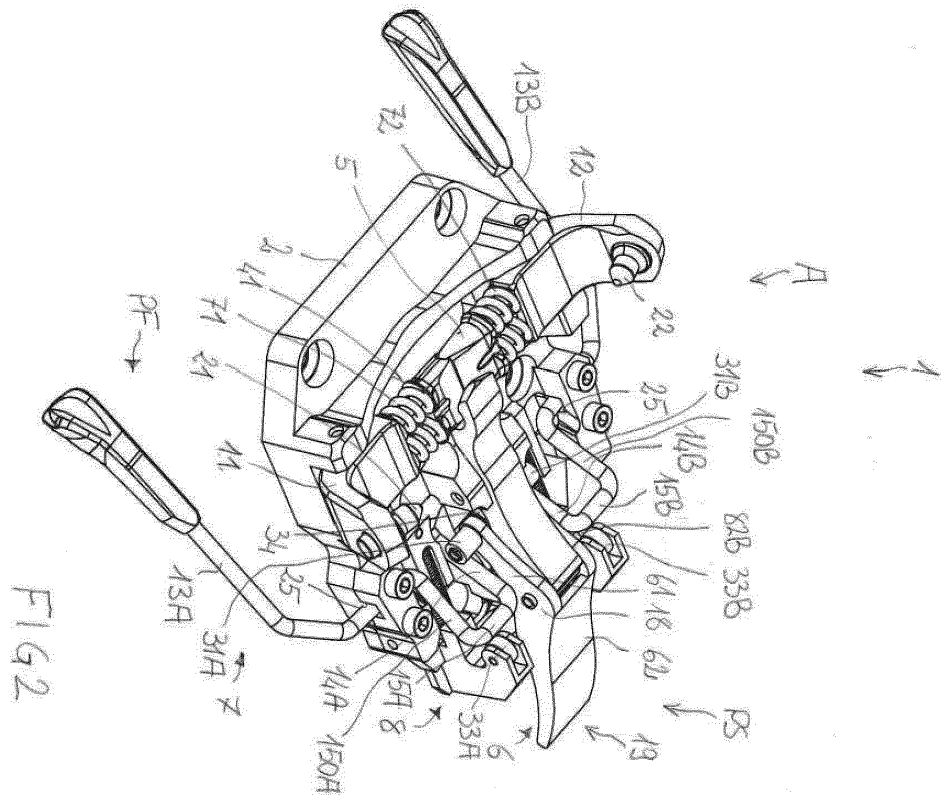
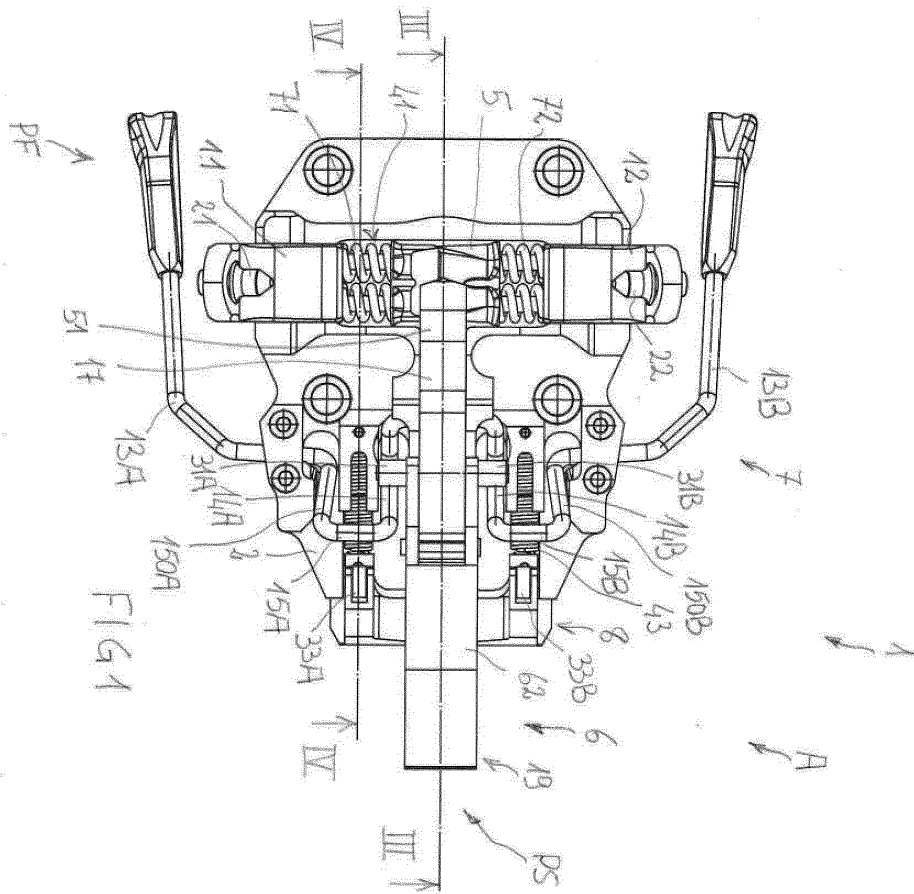
la deuxième position non active (PD2) par effet de l'action élastique des deuxièmes moyens élastiques ;
 elle est conçue de manière à ce que, à partir de la configuration de descente en ski (D), lorsque la chaussure de ski (3) se décroche de la butée de la fixation de ski de randonnée (1) en raison d'une surcharge pendant la descente en ski ou en agissant sur le levier de blocage (6), la deuxième butée (32) se déplace alors le long de la piste (16) du chariot (8) déterminant ainsi un mouvement du chariot (8) contre l'action des troisièmes moyens élastiques (43) jusqu'à provoquer le désengagement de la troisième butée (33A) du chariot (8) de la portion de butée (15A) du frein (7) et le mouvement conséquent de la portion de freinage (13A) dans la position de freinage (PF) par l'action des deuxièmes moyens élastiques.

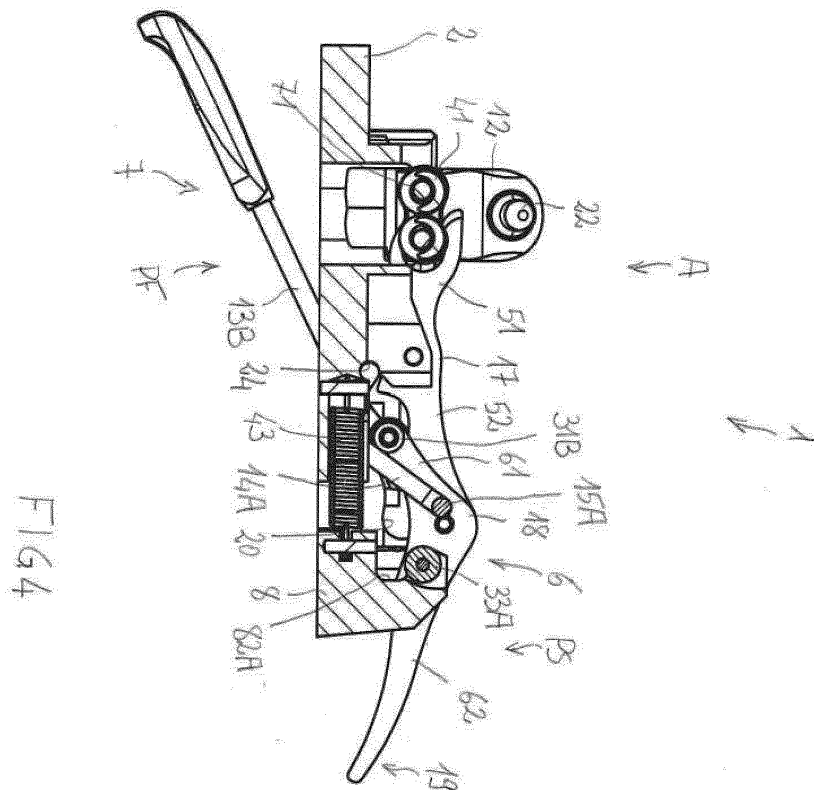
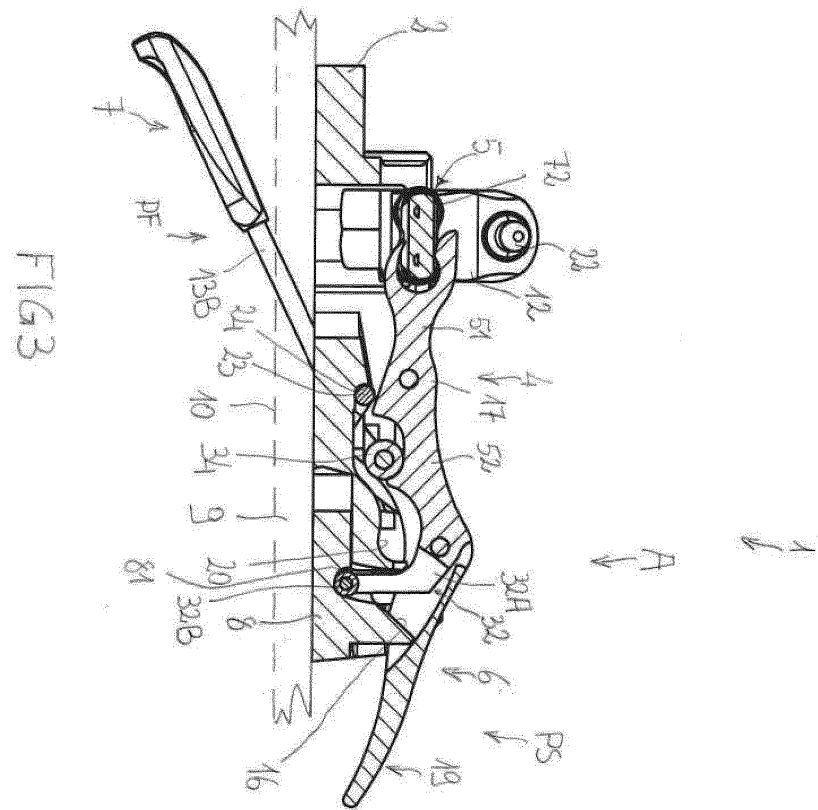
2. La butée d'une fixation de ski de randonnée (1) selon la revendication 1, qui est conçue de manière à ce que la configuration de descente en ski (D) ne puisse être atteinte qu'à partir de la configuration de blocage de la chaussure de ski (C).
3. La butée d'une fixation de ski de randonnée (1) selon la revendication 1, qui est conçue de manière à ce que la configuration de descente en ski (D) puisse également être atteinte à partir de la configuration intermédiaire de chaussure de ski insérée (B), en déplaçant le levier de blocage (6) vers la position de blocage (PB) jusqu'à ce que la première butée (31A) rencontre la portion d'actionnement (14A) du frein (7) amenant ainsi, à son tour, la portion de freinage (13A) dans la deuxième position non active (PD2).
4. La butée d'une fixation de ski de randonnée (1) selon l'une quelconque des revendications précédentes, dans laquelle : le levier d'actionnement (4) s'accouple de façon rotative avec la base (2) au niveau d'une première portion intermédiaire (17) du levier d'actionnement (4), de sorte qu'un premier bras (51) de levier d'actionnement (4) et un deuxième bras (52) de levier d'actionnement (4) sont définis ; le premier bras (51) de levier d'actionnement (4) s'accouple avec l'articulation (5) et le deuxième bras (52) de levier d'actionnement (4) s'accouple de façon rotative avec le levier de blocage (6) ; le levier de blocage (6) s'accouple de façon rotative avec le levier d'actionnement (4) au niveau d'une deuxième portion intermédiaire (18) du levier de blocage (6), de sorte qu'un premier bras (61) de levier de blocage (6) et un deuxième bras (62) de levier de blocage (6) sont définis ; le premier bras (61) de levier de blocage (6)

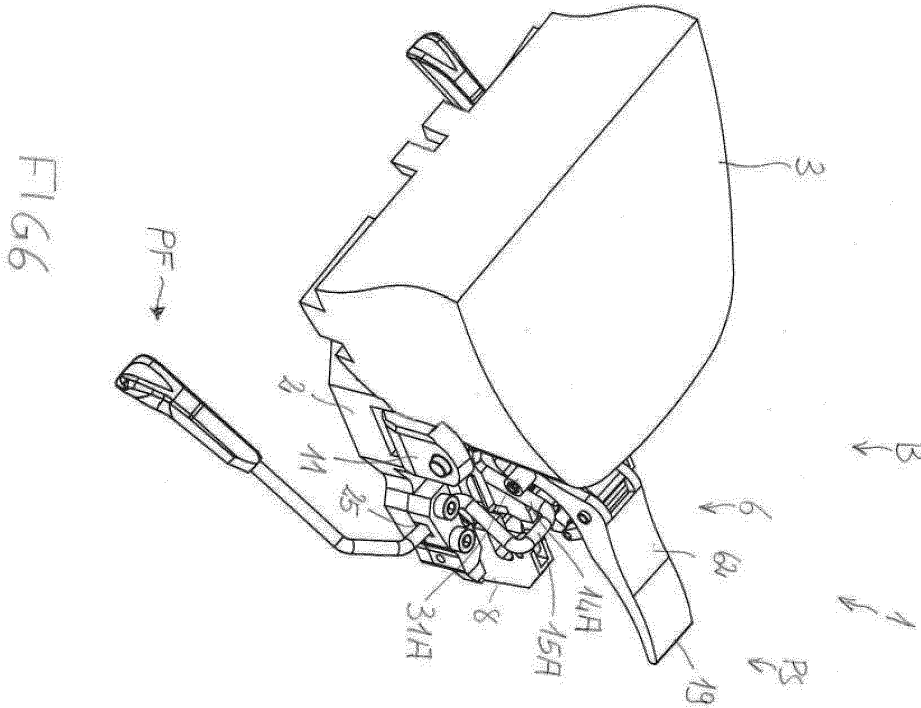
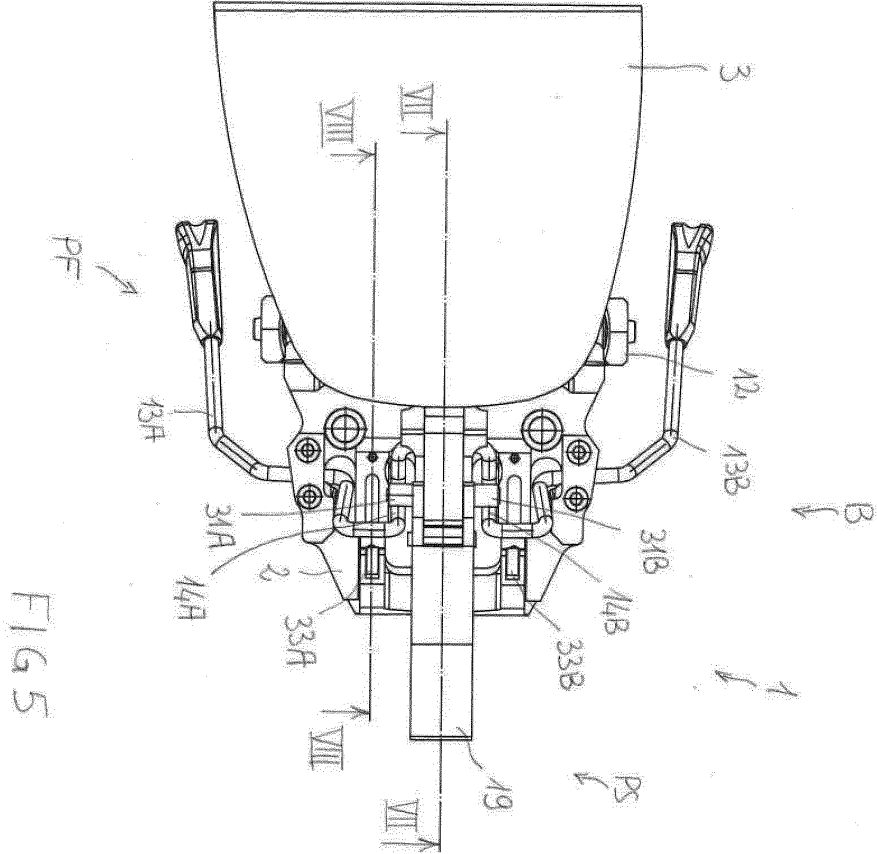
porte la première butée (31A) et le deuxième bras (62) de levier de blocage (6) forme une poignée (19) pour l'actionnement manuel du levier de blocage (6).

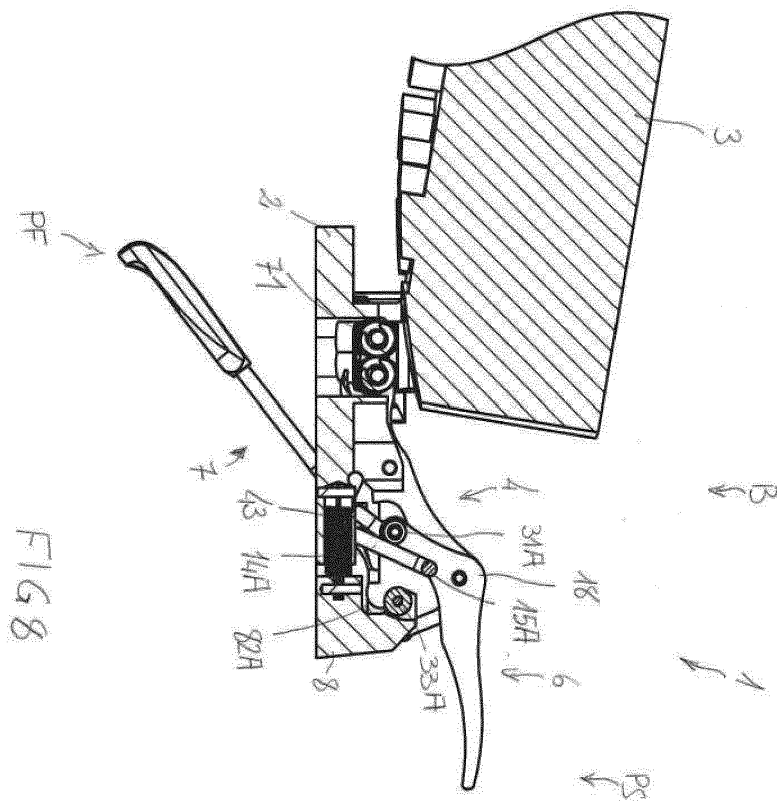
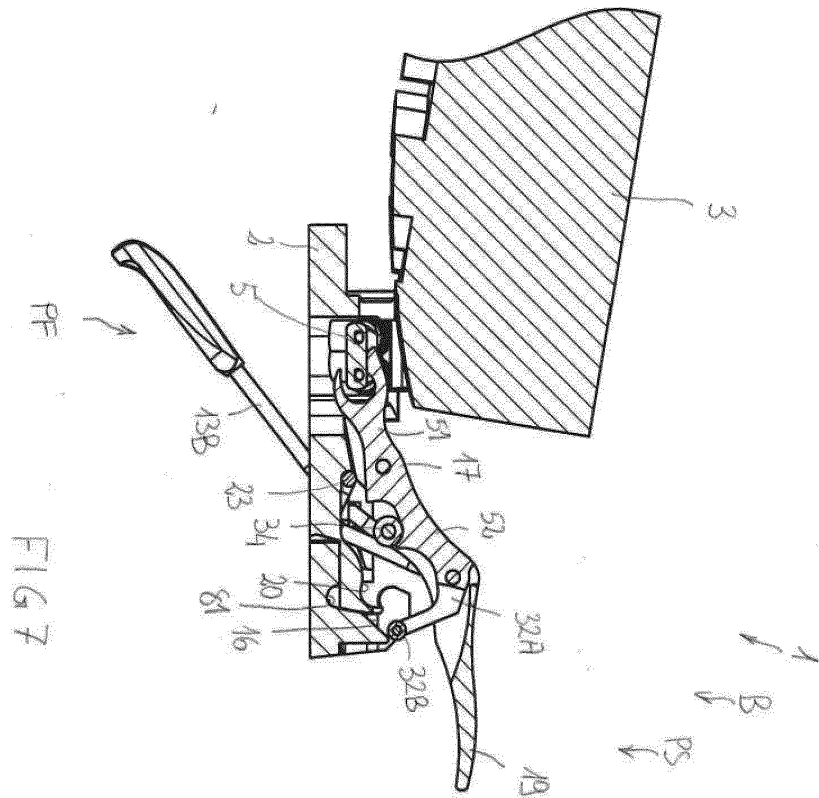
5. La butée d'une fixation de ski de randonnée (1) selon l'une quelconque des revendications précédentes, dans laquelle la première butée (31A) est un premier élément de roulement qui est accouplé de façon rotative avec le levier de blocage (6) et qui dépasse latéralement du levier de blocage (6). 5 10
6. La butée d'une fixation de ski de randonnée (1) selon l'une quelconque des revendications précédentes, dans laquelle le frein (7) pour le ski (9) est un corps unique, est accouplé avec la base (2) et a une forme filiforme. 15
7. La butée d'une fixation de ski de randonnée (1) selon l'une quelconque des revendications précédentes, dans laquelle les troisièmes moyens élastiques (43) sont interposés entre le chariot (8) et la base (2) et sont conçus pour rappeler le chariot (8) vers la base (2). 20
8. La butée d'une fixation de ski de randonnée (1) selon l'une quelconque des revendications précédentes, dans laquelle la deuxième butée (32) comprend un appendice (32A) qui s'étend vers le chariot (8). 25
9. La butée d'une fixation de ski de randonnée (1) selon la revendication précédente, dans laquelle la deuxième butée (32) comprend un deuxième élément de roulement (32B) qui est accouplé de façon rotative à l'extrémité libre de l'appendice (32A) pour s'assujettir de façon coulissante dans la piste (16) du chariot (8). 30 35
10. La butée d'une fixation de ski de randonnée (1) selon l'une quelconque des revendications précédentes, dans laquelle la troisième butée (33A) du chariot (8) comprend un troisième élément de roulement qui est accouplé de façon rotative avec le chariot (8). 40
11. La butée d'une fixation de ski de randonnée (1) selon l'une quelconque des revendications précédentes, dans laquelle : le chariot (8) comprend un premier logement (81) ; le premier logement (81) constitue une extrémité de la piste (16) du chariot (8) ; la butée de la fixation de ski de randonnée (1) est conçue de manière à ce que la deuxième butée (32) soit dans le premier logement (81) lorsque la butée de la fixation de ski de randonnée (1) est dans la configuration prête à recevoir la chaussure de ski (A). 45 50
12. La butée d'une fixation de ski de randonnée (1) selon l'une quelconque des revendications précédentes, dans laquelle le chariot (8) comprend un deuxième logement (82A) pour recevoir la portion de butée 55

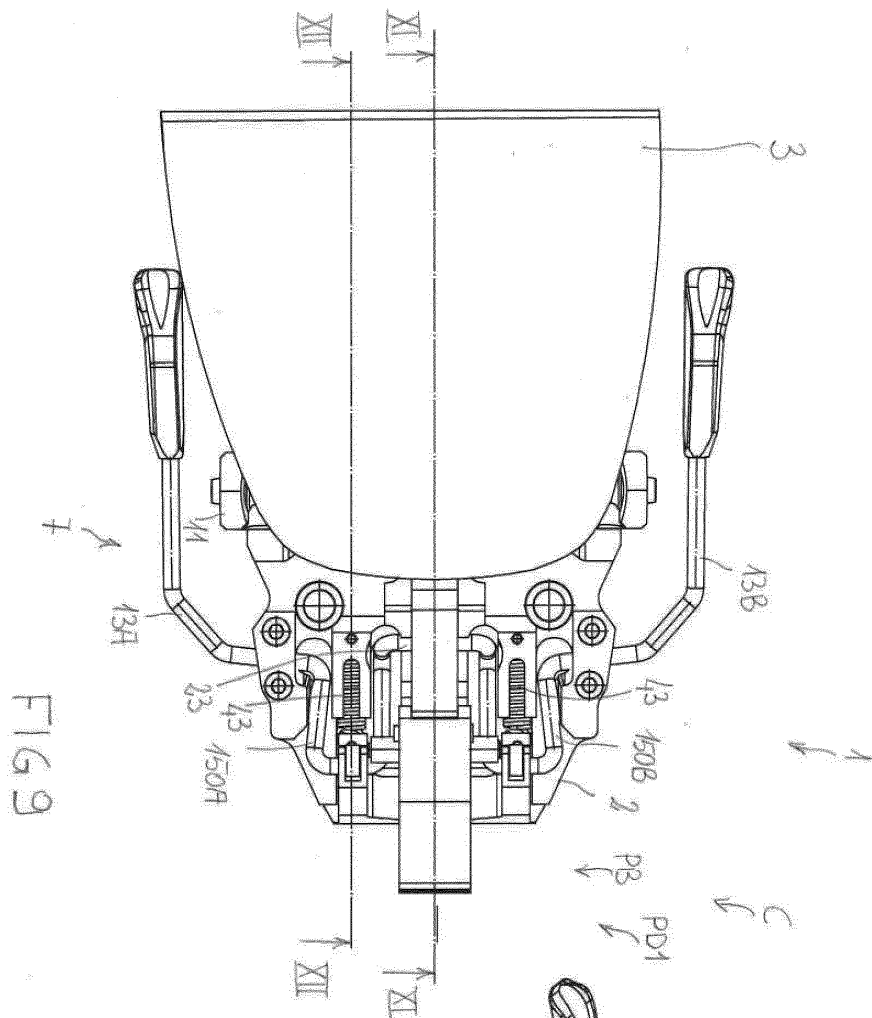
(15A) du frein (7) lorsque la butée de la fixation de ski de randonnée (1) atteint la configuration de blocage de la chaussure de ski (C) à partir de la configuration intermédiaire de chaussure de ski insérée (B).



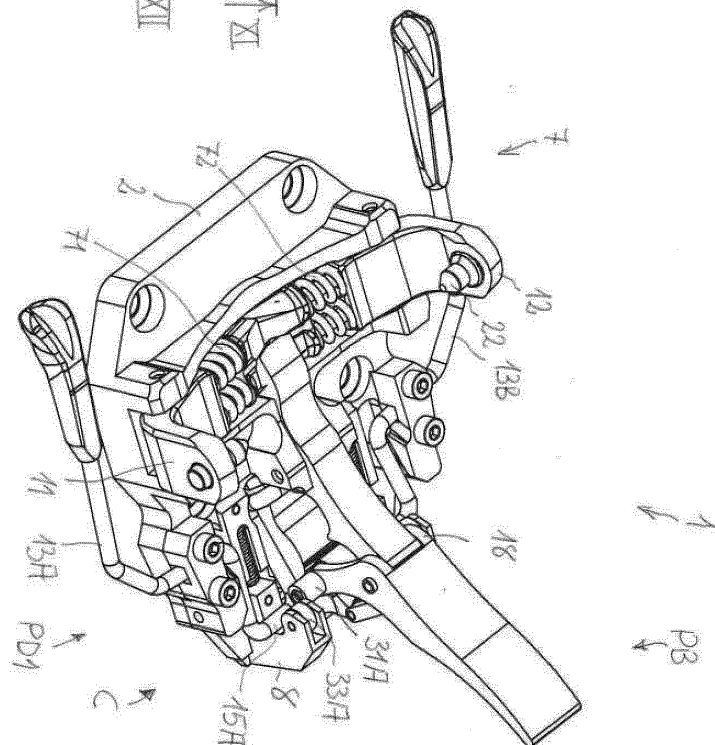








FILE



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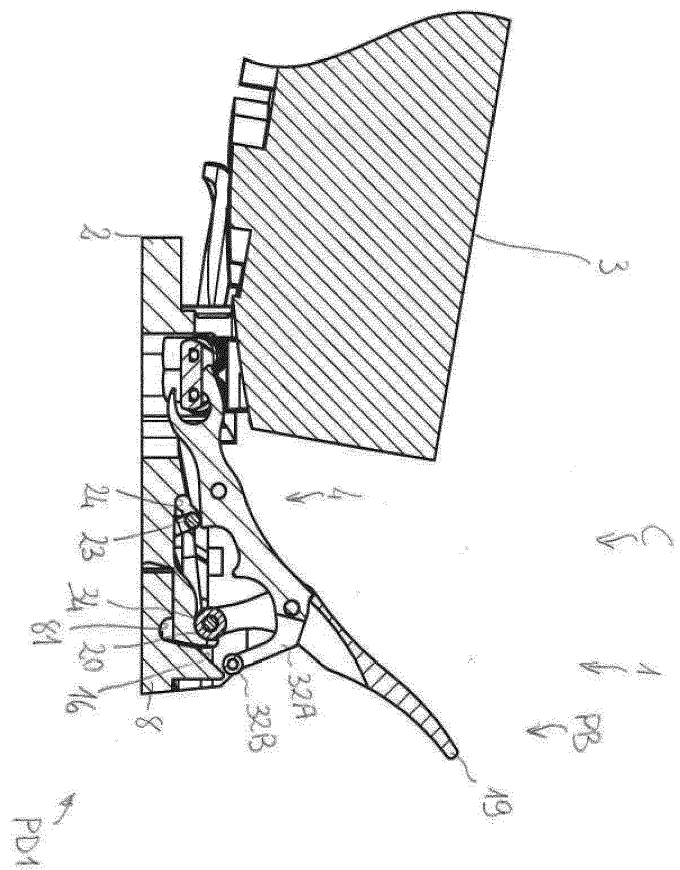


FIG 11

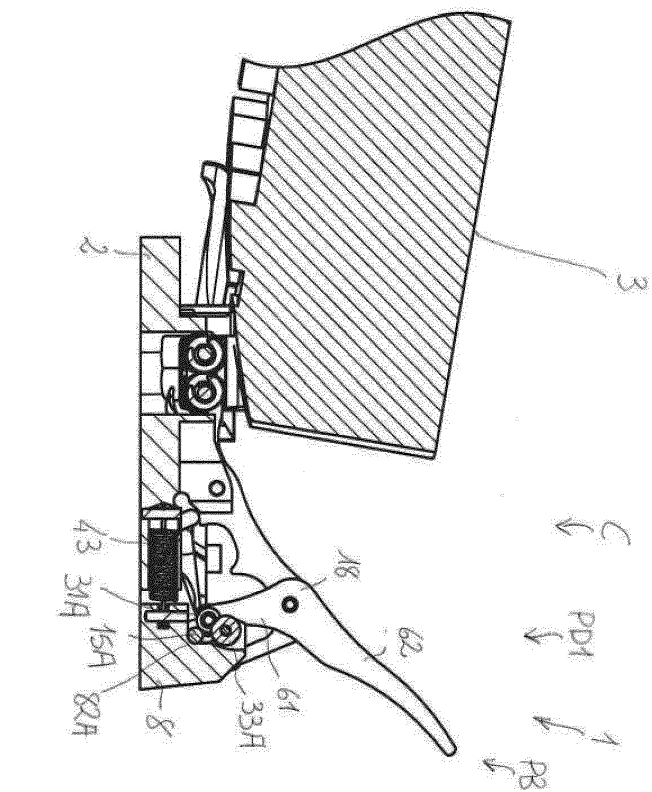


FIG 12

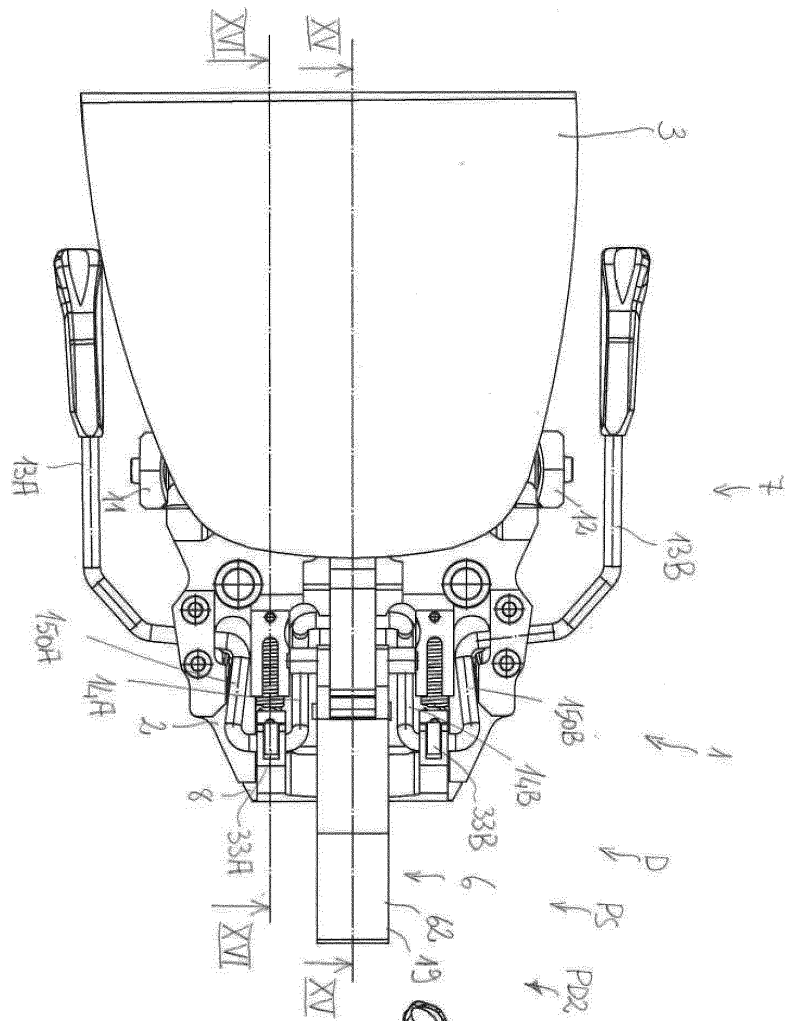


FIG 13

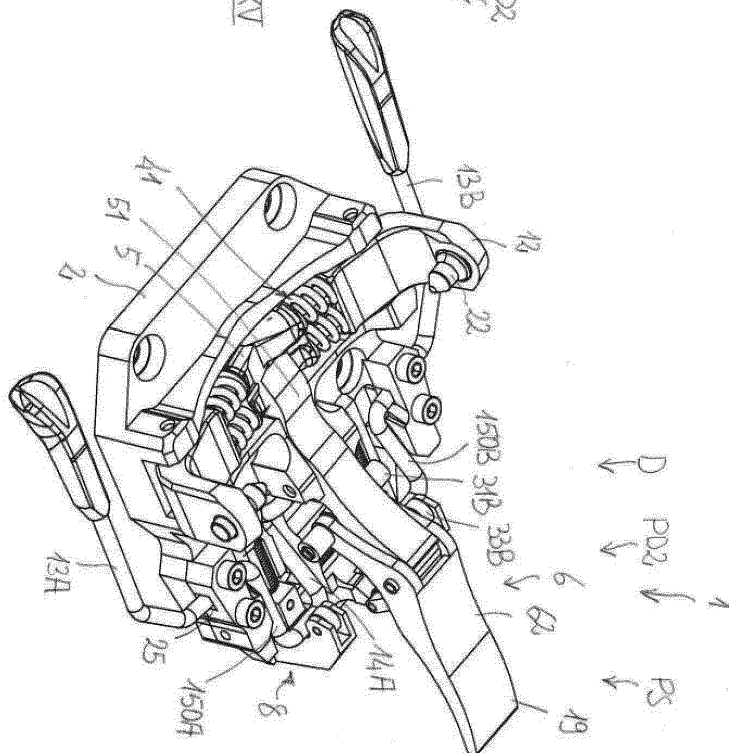
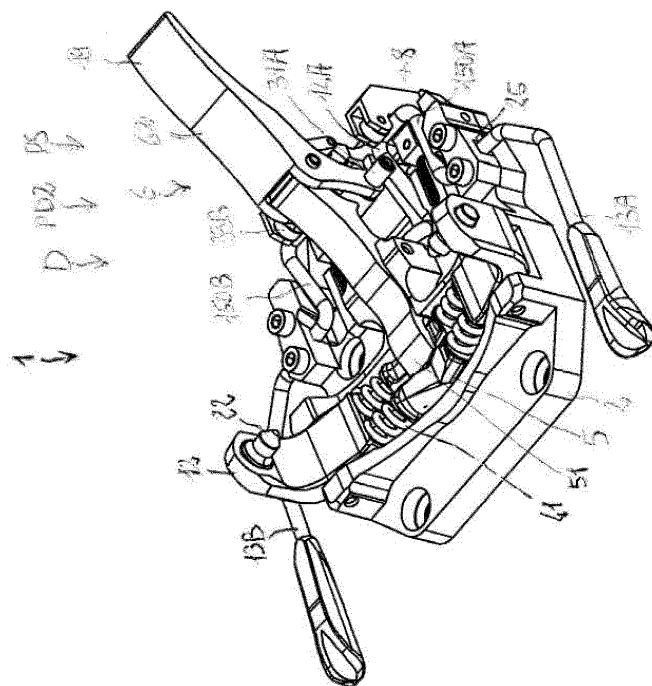
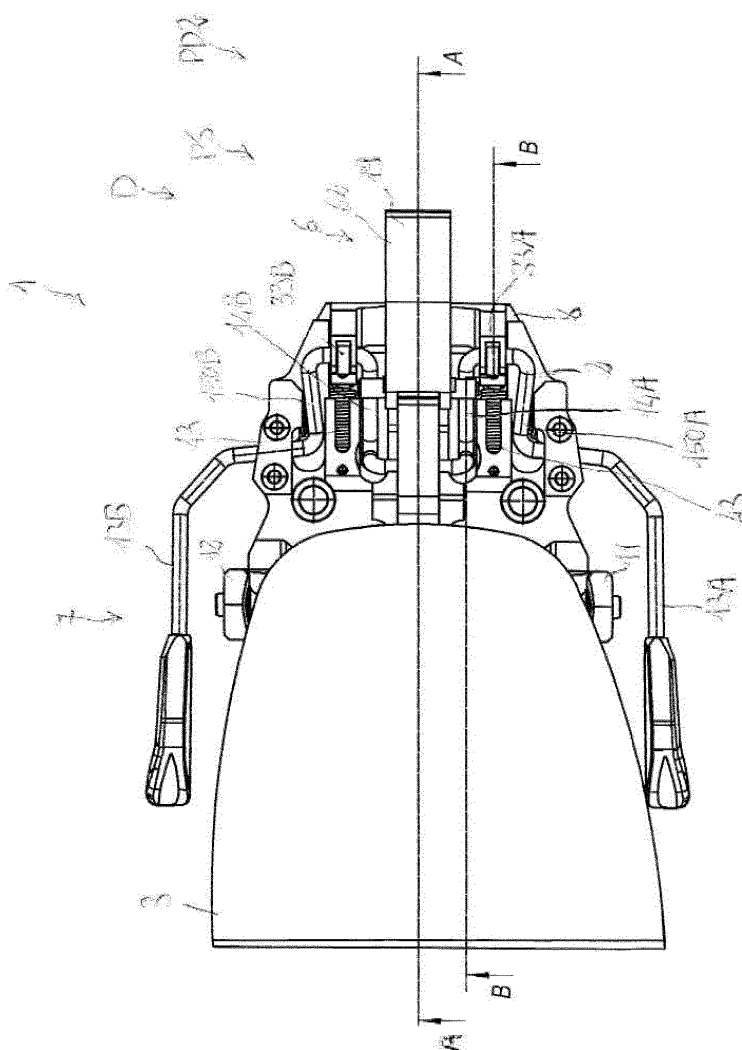


FIG 14



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FIG 15

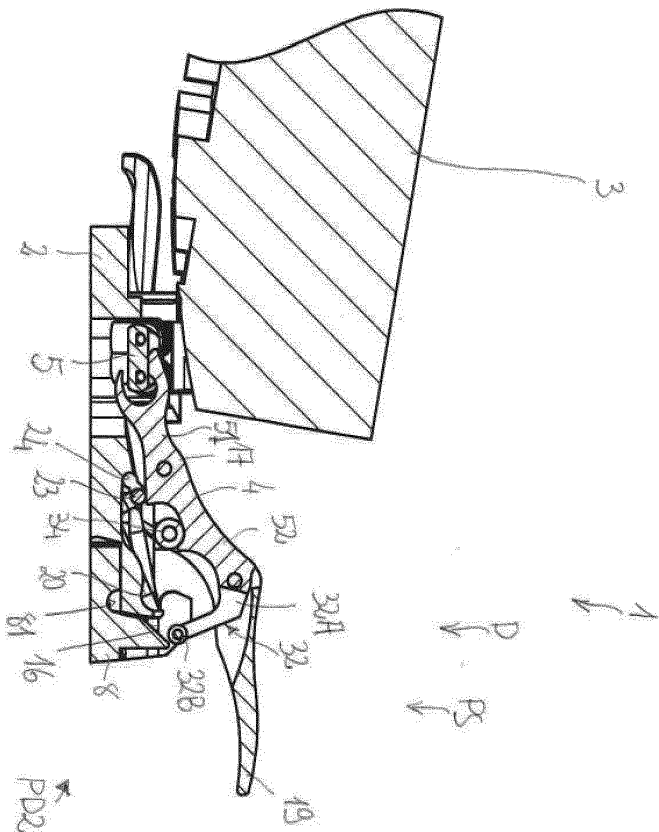
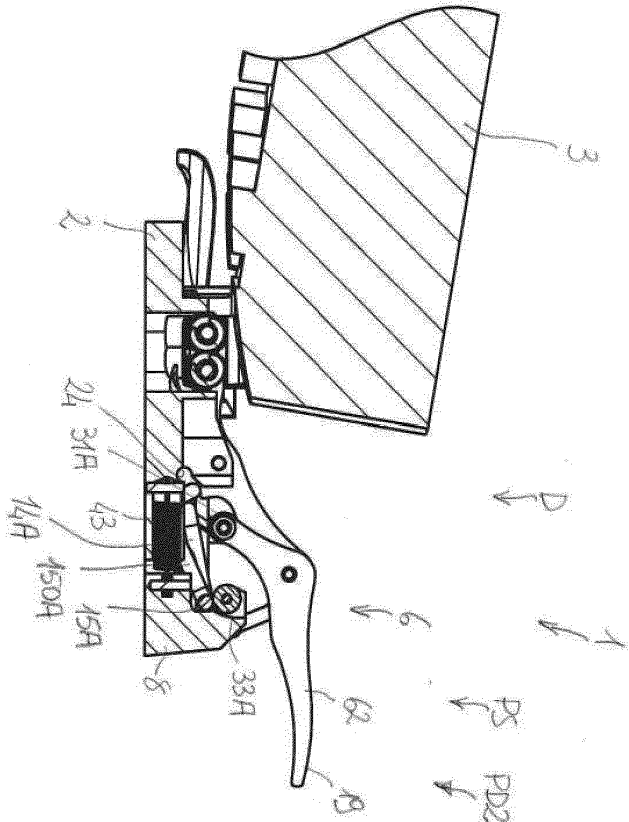
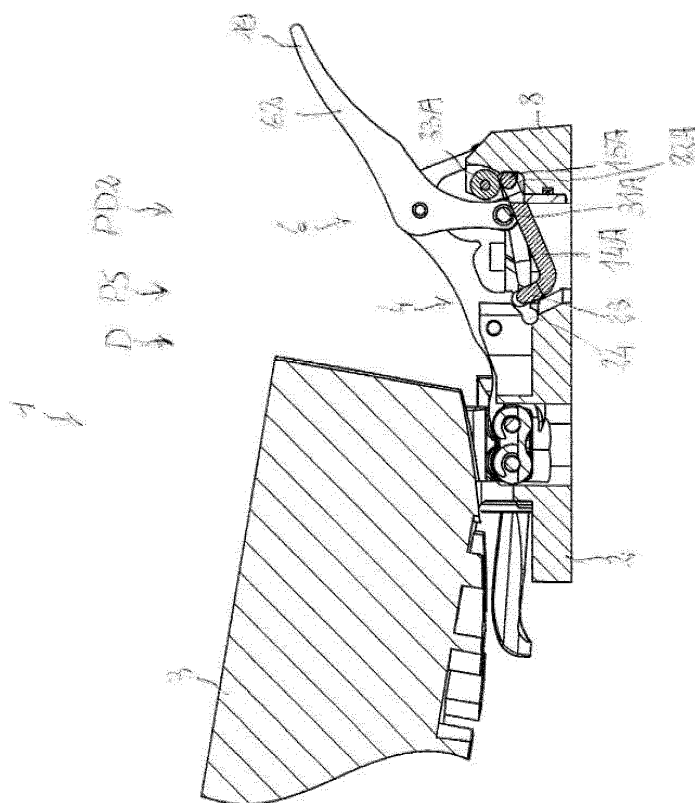
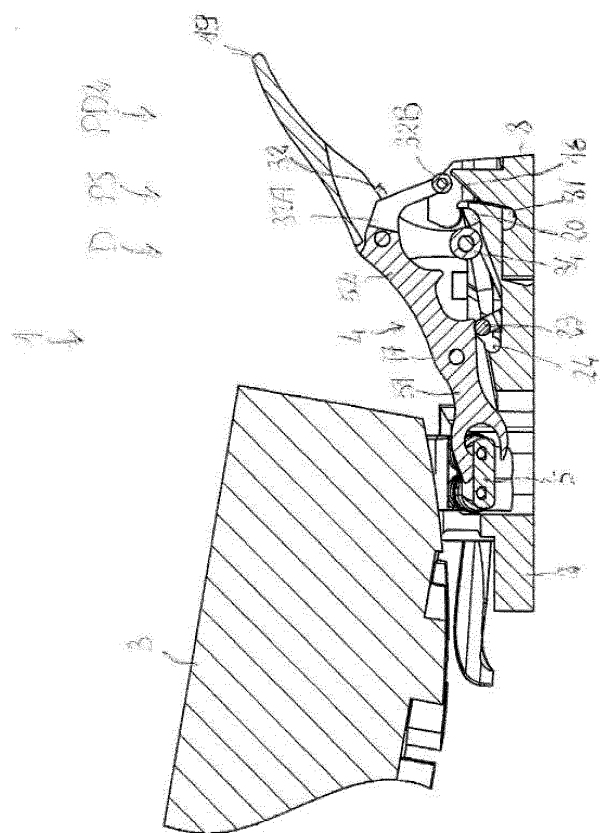


FIG 16

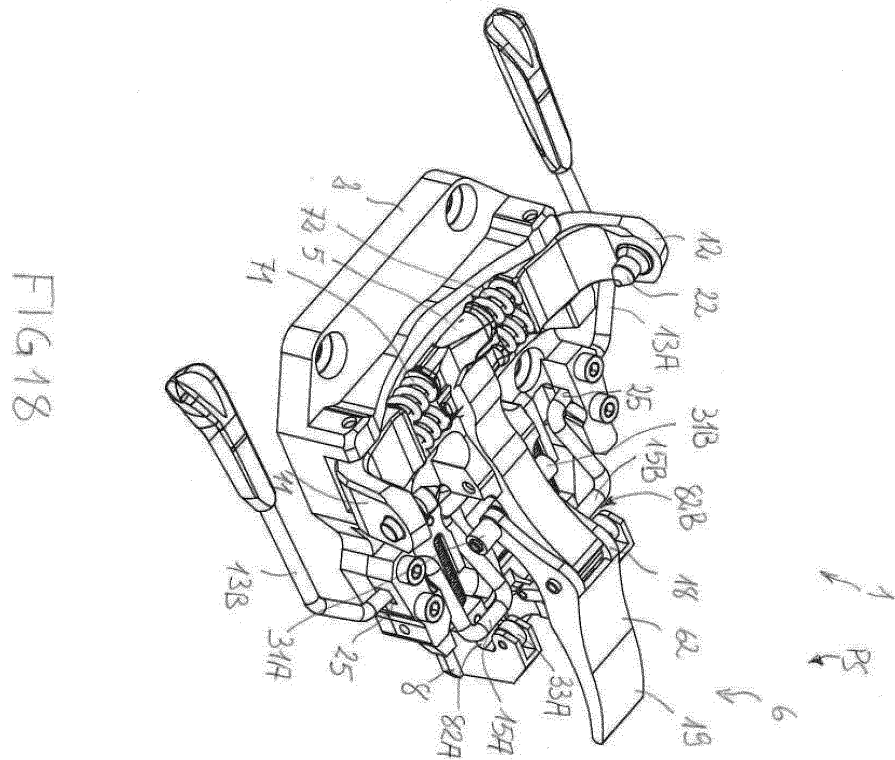
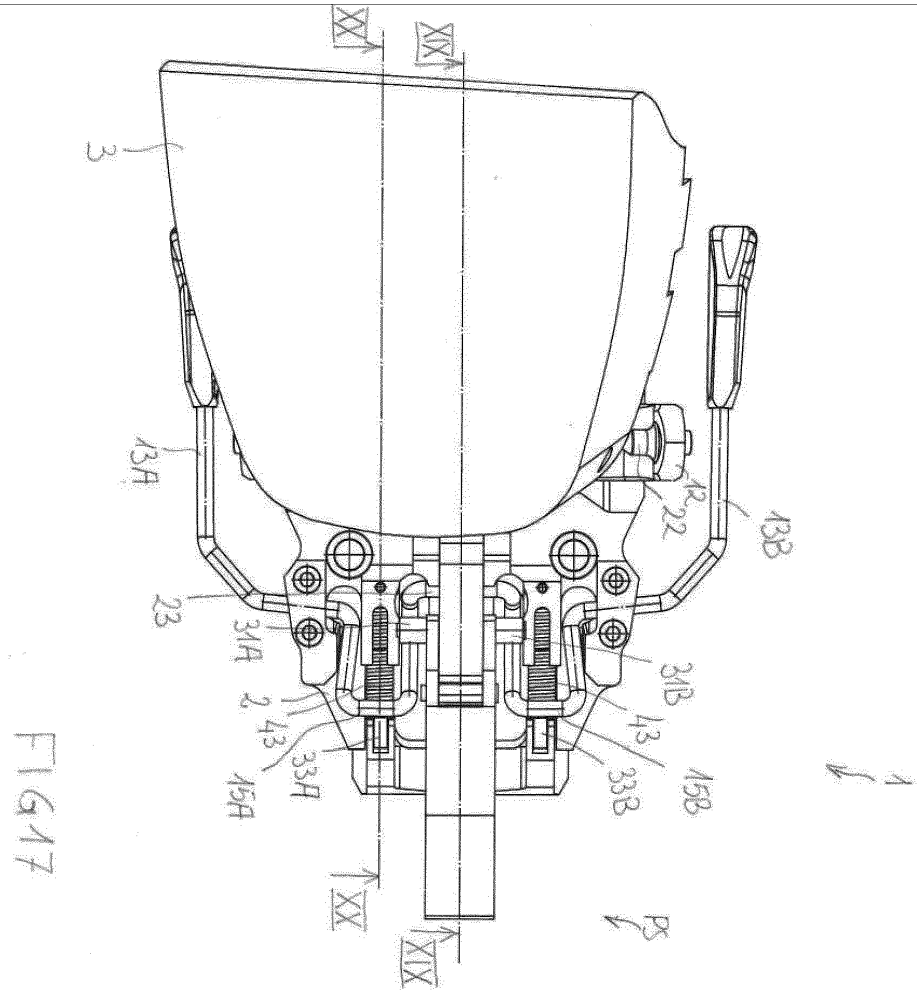




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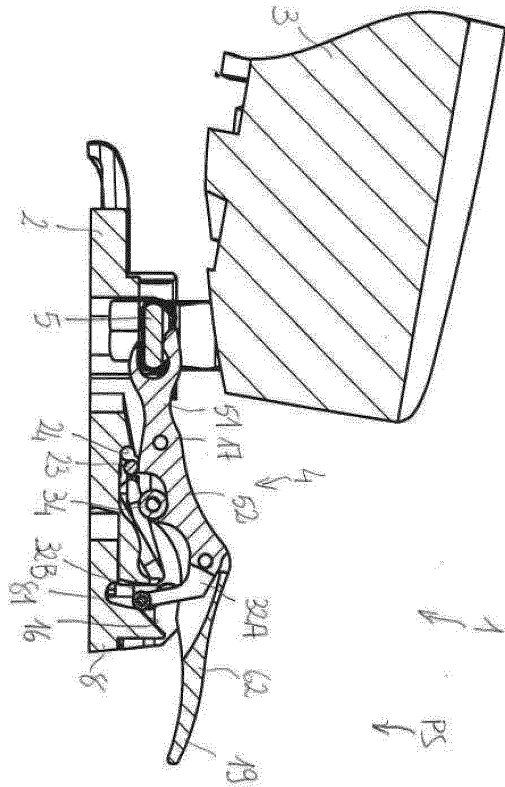


FIG 19

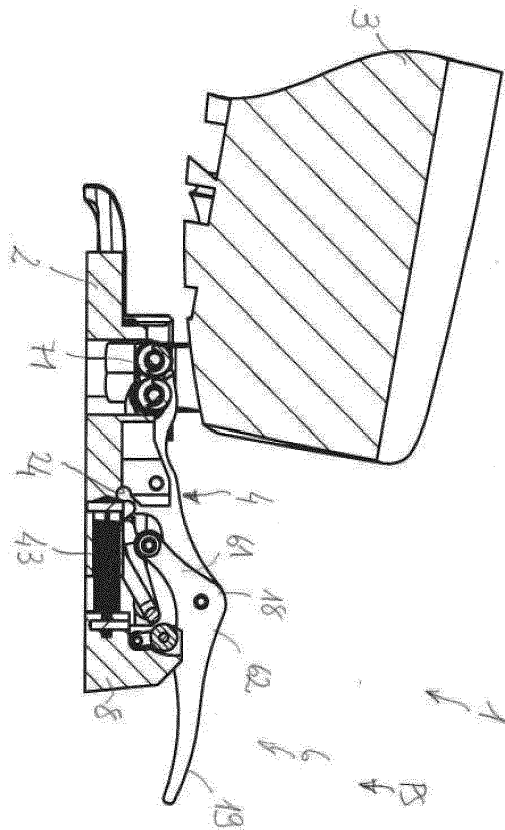


FIG 20

REFERENCES CITED IN THE DESCRIPTION

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