



(12) **EUROPEAN PATENT APPLICATION**

(43) Date of publication:
30.10.2019 Bulletin 2019/44

(51) Int Cl.:
A63C 7/10 (2006.01) A63C 9/086 (2012.01)
A63C 9/08 (2012.01)

(21) Application number: **19159697.2**

(22) Date of filing: **27.02.2019**

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

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(30) Priority: **02.03.2018 IT 201800003205**

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(54) **A SKI STOP DEVICE**

(57) A stop device (D) for skis comprises: a fixing element (1) to the ski, a braking element (2) having a pair of arms (22, 23) and a pair of prongs (25, 26), hinged to the body (10) of the fixing element (1) so as to assume an operating configuration (O), in which the arms (22, 23) are lowered with respect to the ski, and a non-operating configuration (I) in which the arms (22, 23) are raised with respect to the ski. The body (10) of the fixing element (1) comprises a pair of recesses (32, 33) for accommodating the prongs (25, 26) and maintaining the braking element (2) in the operating configuration (O), and a pair of walls (41, 42) for guiding the prongs (25, 26) towards the skis, forcing them to near one another when the prongs (25, 26) are pushed out of the recesses (32, 33) and pushed towards the ski by the lowering of the ski boot. The body (10) is conformed in such a way as to comprise a transversal seating (11), and a manoeuvring member (12), comprising a hook-shaped member (14), is translatable into the transversal seating (11) against the action of the elastic means (M) in order to hook and block a prong when the prongs are lowered towards the ski, maintaining the prongs lowered and thus the braking element (2) in the non-operating configuration.

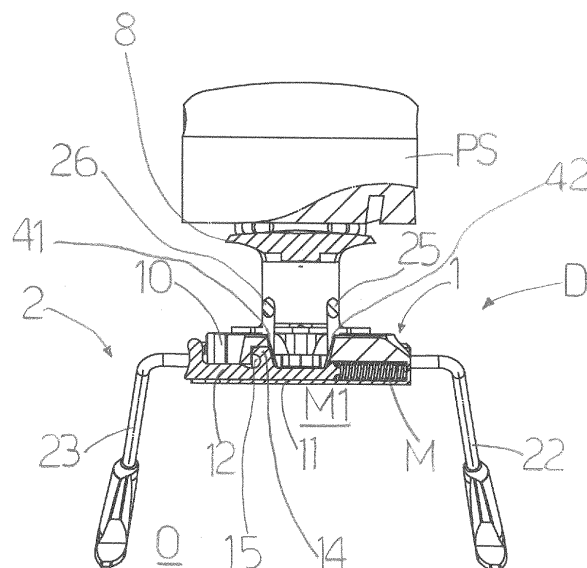


FIG. 2

Description

[0001] The present invention relates to the technical sector concerning attachments, in particular for Alpine skiing.

[0002] In more detail, the invention relates to a ski stop device, destined to be mounted on the ski in a position adjacent to an Alpine skiing attachment, in particular in a forward position to a heel-piece for hooking the rear part of the ski boot so that it is blocked to the ski.

[0003] Since safety attachments were introduced, able to unhook the ski boot from the attachments in moments of unexpected stresses, for example in consequence of a fall, there has been the problem of preventing the ski, following the unhooking, from falling along the slope autonomously or in an uncontrolled way. The same problem exists even when the skis are still to be hooked to the ski-boots.

[0004] To obviate these drawbacks recourse has been made to "ski-stoppers", i.e. ski stop devices which are mounted on the ski adjacent to an attachment, for example to the heel-piece.

[0005] In substance the ski stop devices comprise a fixing element to the ski, which is fixed to the ski so as to be adjacent to the heel-piece, in a forwards position with respect thereto, and a braking element that is conformed as a lever with two arms, where a first arm of the lever is fork-shaped and has a pair of arms distanced from one another by a greater distance than the width of the ski, and a second arm of the lever is conformed so as to have a pair of prongs that are substantially mutually parallel and at a prefixed reciprocal distance.

[0006] The braking element is preferably in a single body, with the two arms of the fork in a single body with the pair of prongs, for example, in particular the braking element is formed by a metal spindle appropriately bent and conformed in such a way as to have, on the other side (which forms the first arm of the lever), the pair of arms, on the other side (which forms the second arm of the lever) the pair of prongs, and a central part for connecting between the arms and the prongs which is coupled to the fixing element.

[0007] The braking element is hinged (in an intermediate part between the pair of arms and the pair of prongs) to the fixing element so as to be oscillating about a hinge axis that is transversal to the fixing element and thus transversal to the ski so as to be able to assume at least two distinct configurations:

an operating configuration, in which the arms of the fork can be arranged flanked to the ski and in a lowered position with respect to the ski so as to be able to at least partly penetrate into the snow and thus create a friction action to brake the ski, while the pair of prongs is raised with respect to the ski, and a non-operating configuration, in which the arms of the fork are raised with respect to the ski in order to enable a sliding of the ski on the snow, while the pair of prongs is lowered towards the ski.

[0008] Stop devices usually comprise a sort of plate

which is coupled to the pair of prongs, to form an abutment for the sole of the rear part of the ski boot.

[0009] The stop devices are conceived and predisposed so that the braking element is always active, i.e. is forced to be maintained in the operating configuration, the arms of the fork being maintained lowered with respect to the ski and the pair of prongs, and therefore the plate, maintained raised with respect to the ski.

[0010] In this way, when the ski is not hooked to the ski-boots, and thus potentially free to slide on the snow, the stop device, maintained in the operating configuration with the arms of the fork lowered, provide a braking action.

[0011] When the skier hooks the ski boot to the ski, by lowering the rear part of the ski boot against the ski to hook it to the heel-piece, the ski boot pushes the plate downwards, and thus also pushes the pair of prongs downwards, causing the braking element to rotate the braking element about the hinge axis thereof to the fixing element, consequently raising the arms of the fork above the ski.

[0012] Some known stop devices include the use of springs for maintaining the pair of prongs (or the plate) raised from the ski, and thus for maintaining the braking element in the operating configuration. When the rear part of the ski boot is lowered onto the ski to hook to the heel-piece, the plate is pushed downwards, compressing the springs; when the ski boot is unhooked from the heel-piece, the springs will push the plate upwards, returning the braking element into the operating configuration.

[0013] Other stop devices of known type comprise a pair of recesses realised in the fixing element having a shape such as to accommodate internally thereof the pair of prongs and a pair of guide walls, which are arranged below the recesses, to guide the prongs towards the ski, forcing the prongs to near one another. When the ski boot is lowered onto the ski to hook to the heel-piece, the plate is pushed downwards, forcing the pair of prongs to exit from the recesses and go into contact with the pair of guide walls the form of which guides the prongs towards the ski and constrains and forces the prongs to near one another; when the ski boot is unhooked from the heel-piece, the prongs will tend to return to the original distance thereof and thus will rise with respect to the guide walls, then to return internally of the recesses, returning the braking element in the operating configuration.

[0014] In substance, in this case, the pair of prongs acts as a sort of spring.

[0015] In the case of use of the stop devices associated to ski attachments to be used in the discipline of Alpine skiing, in which the skier rises to a height while keeping the skis attached, it is necessary to have recourse to specifications which deactivate the stop device, i.e. maintain the braking element in the non-operating configuration, when the skier rises upwards with the skis attached.

[0016] In fact, in order to travel uphill with the skis fitted, the skier keeps only the front part of the ski boot hooked

to the front attachment, i.e. the toe-piece, while the rear part of the ski boot is unhooked from the heel-piece.

[0017] In this way the skier can simulate a walk, as he or she can oscillate the ski boot with respect to the ski, in particular by raising the rear part of the ski boot from the ski.

[0018] In this way, in the case of a presence of a stop device, each time the skier raises the rear part of the ski boot, the braking element will return into the operating configuration and activate: this circumstance obviously would constitute an obstacle to the uphill movement.

[0019] Some of the specifications at present utilised for keeping the stop device deactivated, i.e. keeping the braking element in the non-operating configuration when the skier desires to perform uphill stretches with the skis attached, and then, after having unhooked the rear part of the ski boot from the heel-piece, consist in using blocking elements which are activatable to abut the plate, or the pairs of prongs, and keep the plate lowered, or the pairs of prongs towards the ski, and thus keep the arms of the fork raised with respect to the ski.

[0020] These blocking elements are for example constituted by levers or plates which are externally hinged to the body of the fixing element of the stop device, or to other elements fixed to the ski, and subjected to the action of springs.

[0021] When the skier desires to move uphill with the skis fitted, after having unhooked the rear part of the ski boot from the heel-piece, must rotate the levers or plates with respect to the fixing element, so that they become arranged above the plate, or above the prongs, and block them in the lowered position against the ski, so as to maintain the braking element in the non-operating configuration and deactivate the stop device.

[0022] The presence of these blocking elements (levers, plates and the like), in any case constitutes a drawback as they have a non-insignificant size and constitute a raised part for the ski boot, once they have been activated to block and keep the plate, or the prongs, lowered towards the ski.

[0023] Consequently, should the skier, during an uphill movement, desire to hook the rear part of the ski boot to the ski, for example in order to travel for a short stretch in descent, or for other reasons, he or she would not be able to, as the rear part of the ski boot, once lowered towards the ski, will be in a raised position with respect to the heel-piece, due to the presence of the blocking devices (levers, plates and the like).

[0024] Further, as these blocking elements are externally hinged to the body of the fixing element, the skier must carry out a manoeuvre with the hand to rotate them, action the action of the springs, with respect to the hinge point thereof to the body of the fixing element, a manoeuvre that can be not always easy and which in any case requires a certain manual deftness and familiarity.

[0025] A further specification at present utilised for keeping the stop device deactivated, and thus maintaining the braking element in the non-operating configura-

tion when the skier desires to perform uphill stretches with the skis attached, consists in using the heel-piece to block and keep the plate, or the prongs, lowered towards the ski.

[0026] In this matter, the plate, or prongs, must be pushed towards the ski, and the heel-piece must be rotated according to a vertical axis to the ski so as to bring an appendage thereof, or another abutment element, above the plate or the prongs, in order to block it in the lowered position towards the ski and maintain the arms of the fork raised with respect to the ski and thus maintain the braking element in the non-operating position by deactivating the stop device.

[0027] This solution however is not practical, as the heel-piece has to be rotated and therefore the skier, when wishing to hook the rear part of the ski boot to cover downhill stretches, or for other reasons, will first have to proceed to returning the heel-piece into the original position thereof.

[0028] The aim of the present invention is therefore to provide a ski stop device able to obviate the above-mentioned drawbacks of the prior art described in the foregoing.

[0029] In particular, an aim of the present invention is to provide a ski stop device able to deactivate the braking element, i.e. to maintain the braking element in the non-operating configuration, in simple and rapid ways, without there being a need to rotate the heel-piece, and without elements that are such as to raise the ski boot.

[0030] The above aims are attained according to a ski stop device according to claim 1.

[0031] Further characteristics and advantageous aspects of the ski stop device of the present invention are set down in the dependent claims.

[0032] The characteristics of a preferred, but not exclusive, embodiment of the ski stop device of the present invention will be described in the following description with reference to the appended tables of drawings, in which:

- figure 1 illustrates, in a perspective view, the ski stop device according to the invention, predisposed in a forward position with respect to a heel-piece of a ski attachment, and illustrated in the operating configuration of the braking element, i.e. with the stop device active, and with a part of a ski boot lowering towards the ski to hook to the heel-piece;
- figure 2 is a front view of the stop device of figure 1, partly sectioned according to a section plane that is perpendicular and transversal to the ski, to illustrate particularly significant elements of the stop device of the invention;
- figure 3 is a lateral view of the stop device of figure 1, partly sectioned according to a section plane that is perpendicular and longitudinal to the ski;

- figure 4 is a view along section plane I-I of figure 3;
- figure 5 illustrates, in a perspective view, the ski stop device according to the invention, predisposed in a forward position to a heel-piece of a ski attachment and with the rear part of a ski boot (not illustrated in its entirety) which is hooked to the heel-piece and which thus acts on the stop device to maintain the braking element in the non-operating configuration, and thus the stop device deactivated, to enable the skier to use the ski to perform downhill stretches;
- figure 6 is a front view of the stop device of the configuration of figure 5;
- figure 7 is a view along section plane II-II of figure 6;
- figure 8 is the view of figure 6, partly sectioned according to a plane that is perpendicular and transversal to the ski, with the aim of illustrating particularly significant components of the stop device of the invention;
- figure 9 illustrates the stop device of the invention according to a perspective view in which the stop device is deactivated and the braking element maintained in the raised non-operating configuration with respect to the ski, enabling the skier to move uphill with the skis attached, while maintaining the rear part of the ski boot unhooked from the heel-piece and thus being able to oscillate the ski boot with respect to the ski, i.e. freely raise the rear part of the ski boot from the ski without the stop device returning into the operating configuration thereof;
- figures 10A and 10B illustrate views of the stop device of the invention according to a section plane that is perpendicular and transversal to the ski, in which the positions that certain parts of the stop device of the invention can assume are illustrated, to block and maintain the braking element in the non-operating configuration, and thus the deactivated stop device, as illustrated in figure 9;
- figure 11A is a view from above of the stop device of figure 10A, in which a part has been sectioned according to an oblique section plane in order to display, according to another angulation, the position of the elements of the stop device which operate together to block the braking element in the non-operating configuration,
- figure 11B is a view from above of the stop device of figure 10B, in which a part has been sectioned according to an oblique section plane in order to display, according to another angulation, the position of the elements of the stop device which operate together to block the braking element in the non-

operating configuration.

[0033] With reference to the accompanying tables of drawings, reference letter (D) denotes the ski stop device of the present invention, in its entirety.

[0034] The stop device (D) comprises a fixing element (1) to the ski, which comprises a body (10) that is conformed and predisposed to be fixed to a ski in a forward position with respect to a heel-piece (T) suitable for hooking the rear part (PS) of a ski boot when the rear part of the ski boot is lowered towards the ski.

[0035] In the appended figures the ski has not been illustrated, while in figures 1, 5 and 9 the fixing element (1) of the stop device (D) can be seen, predisposed forward of a heel-piece (T) for the hooking of a rear part (PS) of a ski boot (ski boot not illustrated in its entirety but only in the relative rear part).

[0036] The stop device (D) further comprises a braking element (2) having a shape that is such as to comprise a substantially fork-shaped first part (21) having a pair of arms (22, 23) distanced from one another by a distance that is greater than the width of the ski and a second part (24) comprising a pair of prongs (25, 26) arranged substantially parallel to one another at a prefixed reciprocal distance.

[0037] The braking element (2) is hinged to the body (10) of the fixing element (1) at a third part (27) that is intermediate between the first part (21) and the second part (24) (see for example figures 1 and 4) so as to be oscillating about a hinge axis that is transversal to the fixing element (1) and thus transversal to the ski.

[0038] The braking element (2) is preferably in a single body, with the two arms (22, 23) of the fork in a single body with the pair of prongs (25, 26), for example, in particular the braking element (2) is formed by a metal spindle appropriately bent and conformed in such a way as to have, on one side, the fork with the pair of arms and, on the other side, the pair of prongs, and an intermediate central part for connecting between the arms and the prongs which is coupled and hinged to the fixing element according to a transversal axis.

[0039] The stop device (D) can also comprise, for example, a sort of plate (8) which is coupled to the pair of prongs (25, 26), to form an abutment for the sole of the rear part (PS) of the ski boot.

[0040] In this way the braking element (2) can assume at least two distinct configurations with respect to the fixing element (1), and therefore with respect to the ski:

an operating configuration (O) in which the arms (22, 23) of the fork are arranged in a lowered position with respect to the fixing element (1) and thus in a lowered position with respect to the ski and arranged at the sides of the ski, with the aim of being able to at least partially penetrate into the snow and thus provide a friction action for braking the ski, and with the pair of prongs (25, 26) raised with respect to the fixing element (1) and therefore raised with respect

to the ski (see for example figures from 1 to 4),

a non-operating configuration (I) in which the arms (22, 23) of the fork are raised with respect to the ski in order to enable a sliding of the ski on the snow, and with the pair of prongs (25, 26) lowered towards the fixing element (1) and therefore lowered towards the ski (see for example figures from 5 to 8).

[0041] More in particular, the body (10) of the fixing element (1) is conformed so as to comprise at least a recess, and preferably a pair of recesses (32, 33) which are positioned and conformed for accommodating internally thereof the pair of prongs (25, 26) so as to maintain the braking element (2) in the operating configuration (O), the pair of prongs (25, 26) being raised with respect to the ski and the arms (22, 23) of the fork being arranged at the sides of the ski and in a lowered position with respect to the ski (the recesses (32, 33) present in the body (10) of the fixing element (1) are for example visible in figures 1 and 4).

[0042] Further, the body (10) of the fixing element (1) is conformed in such a way as to comprise at least a wall, and preferably a pair of guide walls (41, 42) arranged and conformed in such a way as to guide the pair of prongs (25, 26) towards the ski and force them to near one another when the prongs (25, 26) are pushed out of the recesses (32, 33) and pushed towards the ski as a consequence of the lowering of the rear part (PS) of the ski boot towards the ski for hooking thereof with the heel-piece (T), with a consequent raising of the arms (22, 23) of the fork and arranging of the braking element (2) in the non-operating configuration (I) (see for example figures from 5 to 7, and in particular figure 8).

[0043] The prongs elastically deform to near one another, sliding along the guide walls (41, 42) towards the ski by the action of pushing towards the ski exerted thereon by the ski boot.

[0044] In this way, as soon as the downwards push exerted by the ski boot stops, or because the skier has unhooked the ski boot from the ski, or as a consequence of a safety unhooking following a fall, the prongs tend immediately to reacquire the initial configuration thereof, and then to return to the predetermined reciprocal distance, returning the guide walls up to repositioning in the recesses, returning the arms of the fork into the lowered position with respect to the ski and thus the braking element into the operating configuration (O).

[0045] The particularities of the stop device (D) of the present invention consist in the fact that the body (10) of the fixing element (1) is conformed in such a way as to comprise a transversal seating (11) and a manoeuvring member (12), for example a slide-shaped element, which is predisposed internally of the transversal seating (11) so as to be slidably movable internally of the transversal seating (11), transversally to the fixing element (1).

[0046] The manoeuvring member (12) is conformed so as to comprise a hook-shaped member (14) and the

body (10) of the fixing element (1) is further conformed in such a way as to comprise a housing (15), having such a shape as to be able to house the hook-shaped member (14) internally thereof.

[0047] The stop device (D) further comprises elastic means (M).

[0048] The stop device (D) of the invention is such that the manoeuvring member (12) is predisposed internally of the transversal seating (11) so as to be positionable in a first position (M1) with respect to the fixing element (1) wherein the hook-shaped member (14) is arranged internally of the housing (15) and a relative first end (121) is accessible from outside the body (10) of the fixing element (1) (see for example figures from 1 to 8).

[0049] With the manoeuvring member (12) arranged in the first position (M1), the stop device (D) can be used in the traditional way.

[0050] The stop device (D) of the invention is such that the manoeuvring member (12) and the elastic means (M) are predisposed and reciprocally configured so that the manoeuvring member (12) can be forced (see for example arrow F1 in figure 10A) to slide in the transversal seating (11) against the action of the elastic means (M), so as to be positionable in a second position (M2) with respect to the fixing element (1) wherein the hook-shaped member (14) is out of the housing (15) and is in a position between the guide walls (41, 42) that is such as in any case to allow the lowering of the prongs (25, 26) towards the ski, when the prongs (25, 26) are pushed out of the recesses (32, 33) and pushed towards the ski, with a consequent raising of the arms (22, 23) of the fork and positioning of the braking element (2) in the non-operating configuration (I) (see for example figures 10A and 11A).

[0051] Further, the elastic means (M) are further predisposed, once the action of the force acting on the manoeuvring member (12) has terminated, to return the manoeuvring member (12) into the second position (M2) to return the manoeuvring member (12) towards the first position (M1) (see for example arrow F2 in figure 10B) so that the hook-shaped member (14) abuts and hooks one of the two prongs (25, 26) so as to maintain the prongs (25, 26) in a lowered position towards the ski and the arms (22, 23) of the fork in a raised position with respect to the ski and thus keep the braking element (2) in the non-operating configuration (I), in order to enable the skier to undertake ascending routes while wearing the skis and with the rear part of the ski boot unhooked from the heel-piece (T) (see for example figures 10B, 11B).

[0052] Owing to this detail, when the manoeuvring member (12) is positioned in the relative first position (M1), with the hook-shaped member (14) arranged internally of the housing (15) and the first end (121) of the manoeuvring member (12) laterally accessible from the fixing element (1), the stop device (D) can be used normally, i.e. can be constantly active.

[0053] Therefore the stop device (D) can carry out its

braking function when the skis are not hooked to the ski boot, and it can be brought into the non-operating configuration (I) when the skier hooks the rear part (PS) of the ski boot to the heel-piece (T) in order to perform downhill stretches (figures 5 and 6).

[0054] Further, if the skier were to unhook the ski boot from the heel-piece to remove the skis, or should there be an automatic unhooking as a consequence of a fall, the braking element (2) can return autonomously, and unproblematically, into the operating configuration (O) so as to reactivate the stop device, in the above-described ways.

[0055] At the moment when the skier desires to perform uphill stretches, while still wearing the skis, once the rear part (PS) of the ski boot from the heel-piece (T) is unhooked and the rear part (PS) of the ski boot has been raised from the ski, to enable the prongs (25, 26) to rise towards the recesses (32, 33) (figure 9), the skier will simply have to force the manoeuvring member (12) in order to cause it to translate in the transversal seating (11) (arrow F1 of figure 10A) against the action of the elastic means (M), up to positioning it in the relative second position (M2), with the hook-shaped member (14) pushed out of the housing (15) and positioned between the guide walls (41, 42), and then push the prongs (25, 26) downwards, or act directly on the prongs (25, 26) or on the plate (8) (arrow V in figure 9).

[0056] Once the prongs (25, 26) have been lowered, the skier will be able to release the manoeuvring member (12) so that the elastic means (M) will automatically cause the manoeuvring member (12) to translate towards the first position (M1) (arrow F2 of figure 10B) so that the hook-shaped member (14) can abut and hook one of the two prongs (25, 26) so as to maintain the prongs (25, 26) in a lowered position towards the ski and thus keep the braking element (2) in the non-operating configuration (I), i.e. with the stop device deactivated (see for example figures 10B and 11B).

[0057] Therefore the skier can freely keep the rear part of the ski boot unhooked from the heel-piece and undertake uphill stretches with the skis still attached and with no difficulty in raising the ski boot from the ski, as the stop element will always and in any case remain deactivated (see figure 9 again).

[0058] Owing therefore to the particularity described in the foregoing, the stop device (D) can easily and rapidly be deactivated, i.e. the braking element positioned in the non-operating configuration (I), without any need of recourse, as in the case of the prior art, to the use of external blocking elements, such as levers or plates, or the rotation of the heel-piece.

[0059] Thus, owing to the presence of the transversal seating (11) in the body (10), the fixing element (1) which internally accommodates the manoeuvring member (12) provided with the hook-shaped member (14) can be positionable internally of the housing (15) and can be made to exit to hook to the prongs (25, 26) thanks to the interaction of the manoeuvring member (12) with the elastic

means (M).

[0060] There will therefore not be unnecessary or useless fittings nor the awkward presence of raised parts on the ski, so that the skier can newly hook the rear part of the ski boot to the heel-piece at any time.

[0061] To return the stop device to the normal functioning thereof, once an uphill path has been completed and before starting on a descent, it will be sufficient to force, for example with a hand or a ski stick, the manoeuvring member (12) to translate into the transversal seating (11) against the action of the elastic means (M) once more towards the second position (M2), so as to unhook the hook-shaped member (14) from the prong.

[0062] In this way, the prongs will instantly and automatically return to the prefixed reciprocal distance thereof by rising along the guide walls (41, 42) up to reinserting in the relative recesses (32, 33).

[0063] The skier can carry out these operations while always wearing the skis, only by raising the rear part of the ski boot to enable the prongs to return into the recesses; after which the rear part of the ski boot can be lowered to hook to the heel-piece and, consequently, to take the stop device into the non-operating configuration (I) for the descent in the ways described in the foregoing.

[0064] Further advantageous characteristics of the stop device of the present invention are set down in the following.

[0065] The body (10) of the fixing element (1) is conformed in such a way as to comprise a second housing (16) and the elastic means (M) are predisposed in the second housing (16).

[0066] The manoeuvring member (12) is predisposed in the transversal seating (11) so that a relative first end (121) is arranged and accessible externally of the body (10) of the fixing element (1) and so that a relative second end (122) is in contact with the elastic means (M) or can go into contact with the elastic means (M) when the manoeuvring member (12) is forced to translate into the transversal seating (11) so as to be positioned in the second position (M2).

[0067] The manoeuvring member (12) and the elastic means (M) are configured and reciprocally predisposed so that the elastic means (M) maintain the manoeuvring member (12) in the first position (M1) with respect to the fixing element (1) wherein the hook-shaped member (14) is arranged internally of the housing (15) and the first end (121) of the manoeuvring member (12) is accessible from outside the body (10) of the fixing element (1), for example as it projects body (10) (see for example figure 2 and figure 8).

[0068] The fact of having the manoeuvring member (12) having the second end (122) thereof in contact with the elastic means (M), and the elastic means (M) predisposed for maintaining the manoeuvring member (12) in the first position (M1) enables, when the skier wishes to reactivate the stop device forcing the manoeuvring member (12) so as to return it into the second position (M2) to free the prongs, an automatic and instantaneous return

of the manoeuvring member (12) into the first position (M1) due to the action of the elastic means (M).

[0069] At the same time the prongs (25, 26), as soon as the skier forces the manoeuvring member (12) to bring it into the second position (M2), for example using a hand or a ski stick, the prongs instantaneously and automatically return into the recesses, reactivating the stop device.

[0070] The elastic means (M), as mentioned in the foregoing, as soon as the skier ends his or her action on the manoeuvring member (12), with automatically return the manoeuvring member (12) into the first position (M1), with the repositioning of the hook-shaped member (14) in the housing (15), so that the stop device can be newly used in classic mode.

[0071] The elastic means (M) are preferably constituted by a spring.

[0072] In the preferred embodiment illustrated in the accompanying figures, the manoeuvring member (12) and the spring are predisposed so that in order to bring the manoeuvring member (12) into the second position (M2) the manoeuvring member (12) must be pushed to translate into the transversal seating (11) against the spring, and compressing it.

[0073] In other possible embodiments that are entirely equivalent, and therefore fall into the same scope of protection, variants can be proposed in which the manoeuvring member (12) and the spring are predisposed so that in order to bring the manoeuvring member (12) into the second position (M2) the manoeuvring member (12) must be pushed to translate into the transversal seating (11) forcing the spring to elongate.

[0074] The hook-shaped member (14) will consequently have to be appropriately orientated with respect to the position of the prongs.

[0075] The guide walls (41, 42) can preferably be made and conformed so as to have a mutually converging conformation towards the ski or a conformation that is such as to be mutually parallel and at a reciprocal distance that is smaller than the prefixed reciprocal distance of the prongs (25, 26) of the braking element (2).

Claims

1. A ski stop device (D), comprising:

a fixing element (1) to the ski, for fixing to a ski in a forward position with respect to a heel-piece (T) suitable for hooking the rear part (PS) of a ski boot when the rear part of the ski boot is lowered towards the ski;

a braking element (2) having a shape that is such as to comprise a fork-shaped first part (21) having a pair of arms (22, 23) distanced from one another by a distance that is greater than the width of the ski and a second part (24) comprising a pair of prongs (25, 26) arranged substan-

tially parallel to one another at a prefixed reciprocal distance, the braking element (2) being hinged to the fixing element (1) at a third part (27) that is intermediate between the first part (21) and the second part (24) so as to be oscillating about a hinge axis that is transversal to the fixing element (1) and thus transversal to the ski, in such a way that the braking element (2) can assume at least two distinct configurations with respect to the fixing element (1), and therefore with respect to the ski:

an operating configuration (O) in which the arms (22, 23) of the fork are arranged in a lowered position with respect to the fixing element (1) and thus in a lowered position with respect to the ski and arranged at the sides of the ski, with the aim of being able to at least partially penetrate into the snow and thus provide a friction action for braking the ski, and with the pair of prongs (25, 26) raised with respect to the fixing element (1) and therefore raised with respect to the ski, a non-operating configuration (I) in which the arms (22, 23) of the fork are raised with respect to the ski in order to enable a sliding of the ski on the snow, and with the pair of prongs (25, 26) lowered towards the fixing element and therefore lowered towards the ski;

the fixing element (1) having a body (10) that is conformed in such a way as to comprise:

a pair of recesses (32, 33) which are positioned and conformed for accommodating internally thereof the pair of prongs (25, 26) so as to maintain the braking element (2) in the operating configuration (O), the pair of prongs (25, 26) being raised with respect to the ski and the arms (22, 23) of the fork being arranged at the sides of the ski and in a lowered position with respect to the ski,

and a pair of guide walls (41, 42) arranged and conformed in such a way as to guide the pair of prongs (25, 26) towards the ski and force them to near one another when the prongs (25, 26) are pushed out of the recesses (32, 33) and pushed towards the ski as a consequence of the lowering of the rear part (PS) of the ski boot towards the ski for hooking thereof with the heel-piece (T), with a consequent raising of the arms (22, 23) of the fork and arranging of the braking element (2) in the non-

operating configuration (I);
and being **characterised in that** it comprises a manoeuvring member (12) and elastic means (M) and **in that** the body (10) is conformed in such a way as to comprise a transversal seating (11), wherein:

the manoeuvring member (12) is predisposed internally of the transversal seating (11) so as to be slidably movable internally of the transversal seating (11), transversally to the fixing element (1), and is conformed in such a way as to comprise a hook-shaped member (14),

the body (10) of the fixing element (1) is further conformed in such a way as to comprise a housing (15), having such a shape as to be able to house the hook-shaped member (14) internally thereof,

the manoeuvring member (12) is predisposed internally of the transversal seating (11) so as to be positionable in a first position (M1) with respect to the fixing element (1) wherein the hook-shaped member (14) is arranged internally of the housing (15) and a relative first end (121) is accessible from outside the body (10) of the fixing element (1),

the manoeuvring member (12) and the elastic means (M) being predisposed and reciprocally configured so that the manoeuvring member (12) can be forced to slide in the transversal seating (11) against the action of the elastic means (M), so as to be positionable in a second position (M2) with respect to the fixing element (1) wherein the hook-shaped member (14) is in a position between the guide walls (41, 42) that is such as in any case to allow the lowering of the prongs (25, 26) towards the ski, when the prongs (25, 26) are pushed out of the recesses (32, 33) and pushed towards the ski, with a consequent raising of the arms (22, 23) of the fork and positioning of the braking element (2) in the non-operating configuration (I),

the elastic means (M) being further predisposed, once the action of the

force acting on the manoeuvring member (12) has terminated, to return the manoeuvring member (12) towards the first position (M1) so that the hook-shaped member (14) abuts and hooks one of the two prongs (25, 26) so as to maintain the prongs (25, 26) in a lowered position towards the ski and the arms (22, 23) of the fork in a raised position with respect to the ski and thus keep the braking element (2) in the non-operating configuration (I), in order to enable the skier to undertake ascending routes while wearing the skis and with the rear part of the ski boot unhooked from the heel-piece (T).

2. The ski stop device of claim 1, wherein the body (10) of the fixing element (1) is conformed in such a way as to comprise a second housing (16) and wherein the elastic means (M) are predisposed in the second housing (16).

3. The ski stop device of claim 2, wherein the elastic means (M) are arranged in the second housing (16) and wherein the manoeuvring member (12) is predisposed and positioned in the transversal seating (11) so that a relative second end (122) can go into contact with the elastic means (M) when the manoeuvring member (12) is forced to translate in the transversal seating (11) so as to be positioned in the second position (M2).

4. The ski stop device of claim 3, wherein the elastic means (M) are arranged in the second housing (16) and wherein the manoeuvring member (12) is predisposed and positioned in the transversal seating (11) so that a relative second end (122) is in contact with the elastic means (M) and the elastic means (M) are predisposed and configured so as to act on the second end (122) of the manoeuvring member (12) so as to maintain the manoeuvring member (12) in the first position (M1) wherein the hook-shaped member (14) is arranged internally of the housing (15) and the first end (121) of the manoeuvring member (12) projects from the body (10) of the fixing element (1).

5. The ski stop device of any one of the preceding claims, wherein the elastic means (M) comprise a spring.

6. The ski stop device of any one of the preceding claims, wherein the guide walls (41, 42) have a mutually converging conformation towards the ski or a conformation that is such as to be mutually parallel

and at a reciprocal distance that is smaller than the prefixed reciprocal distance of the prongs (25, 26).

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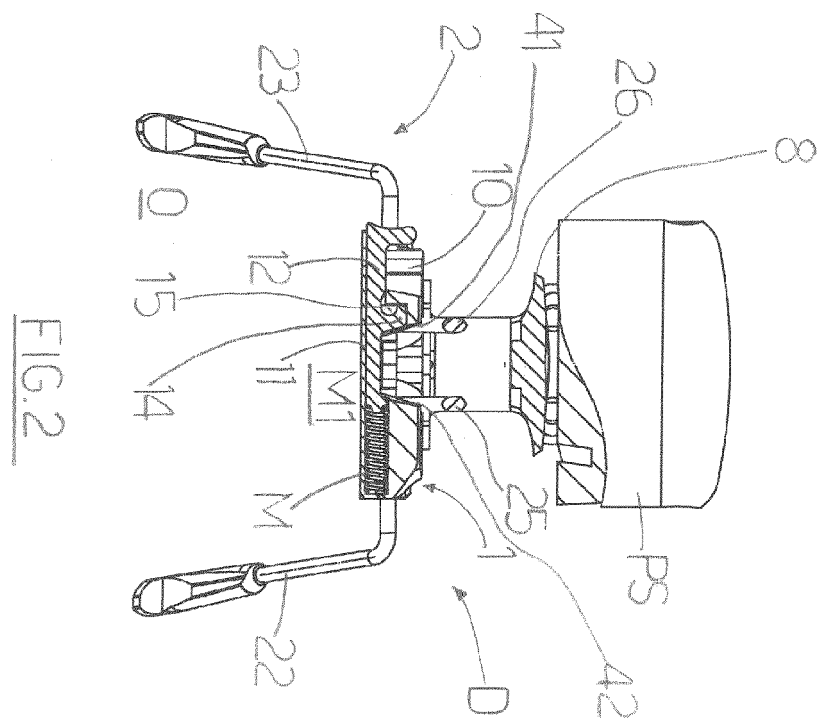
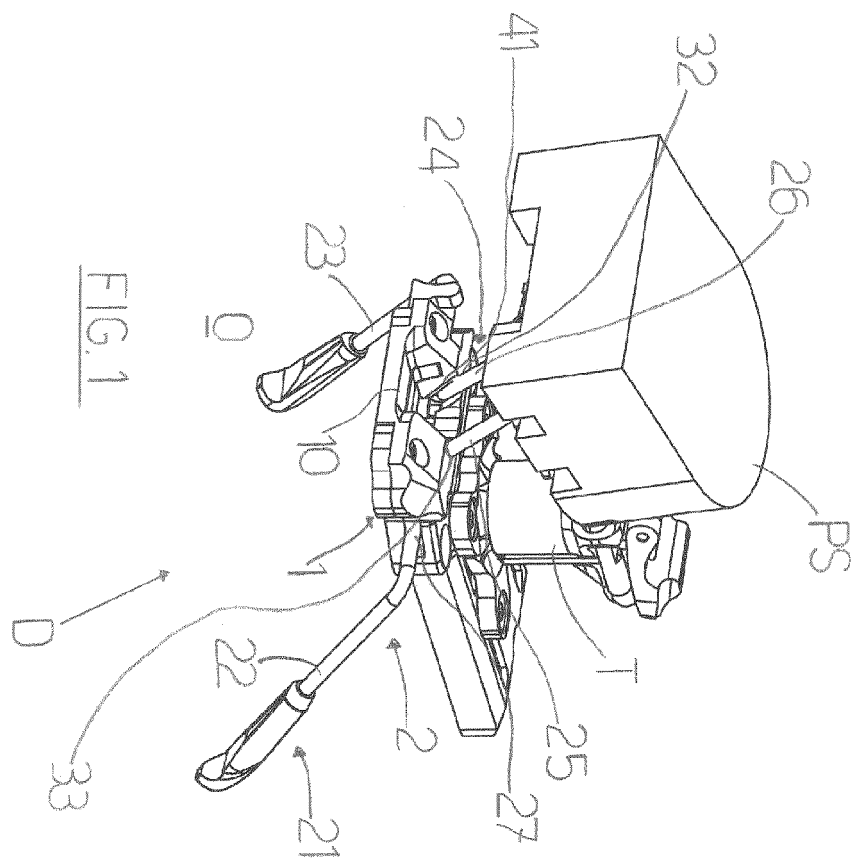
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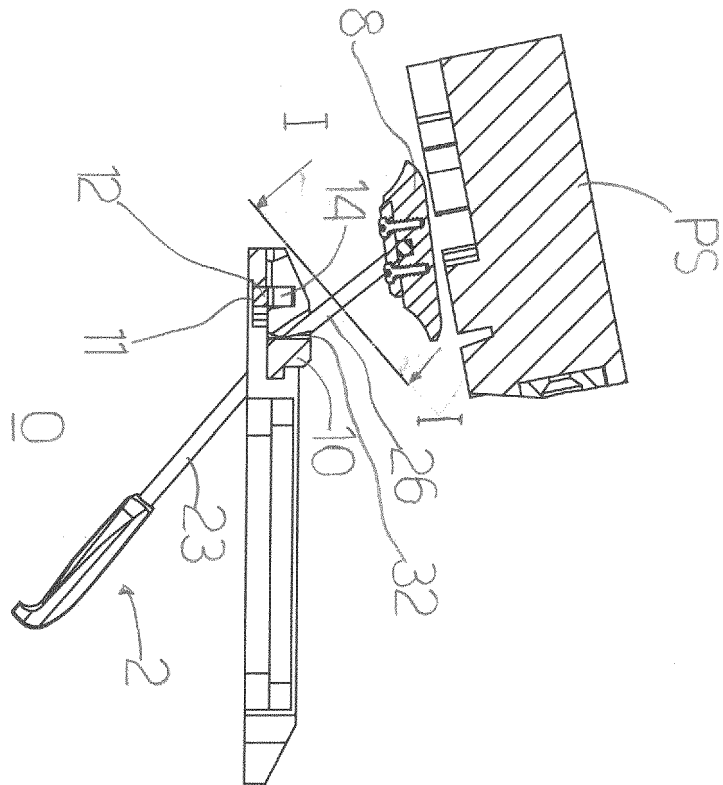


FIG. 3

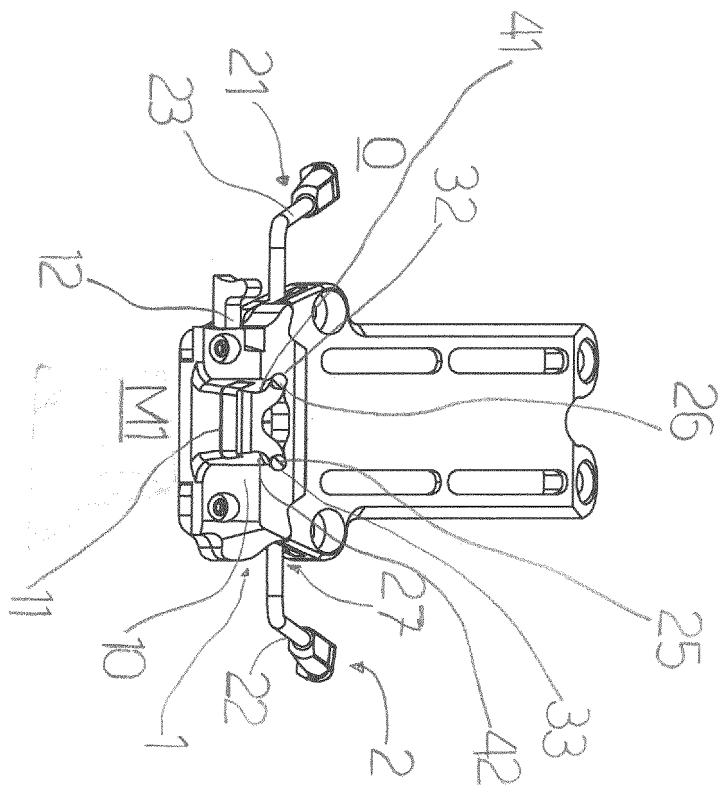
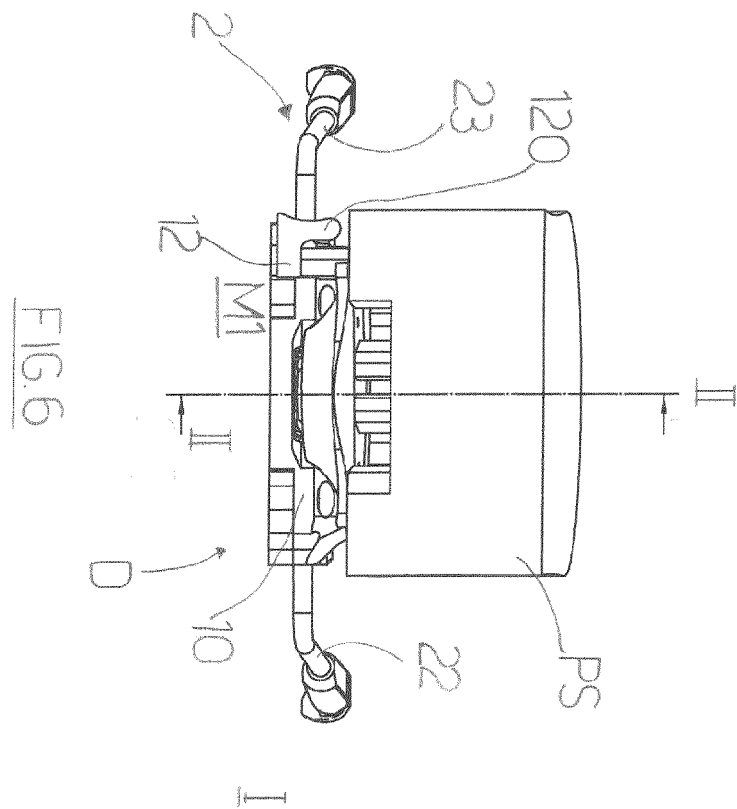
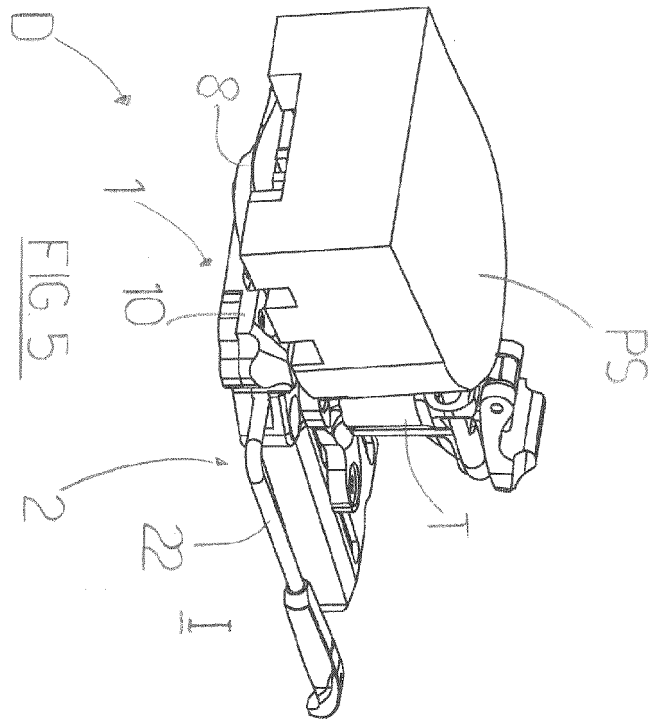


FIG. 4



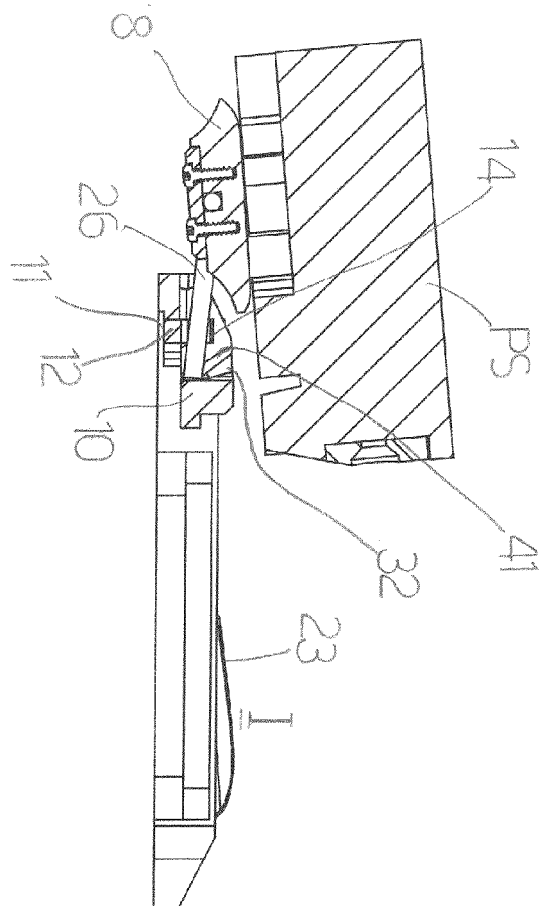
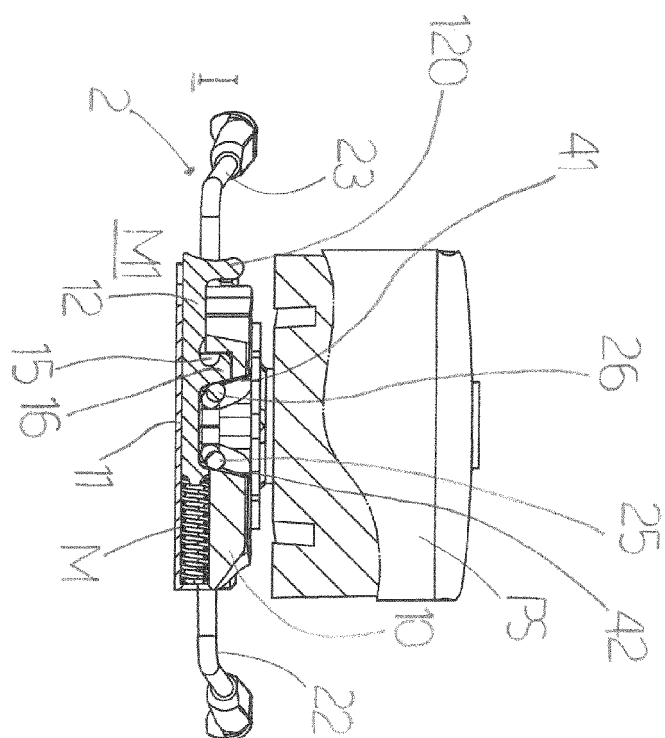


FIG. 7



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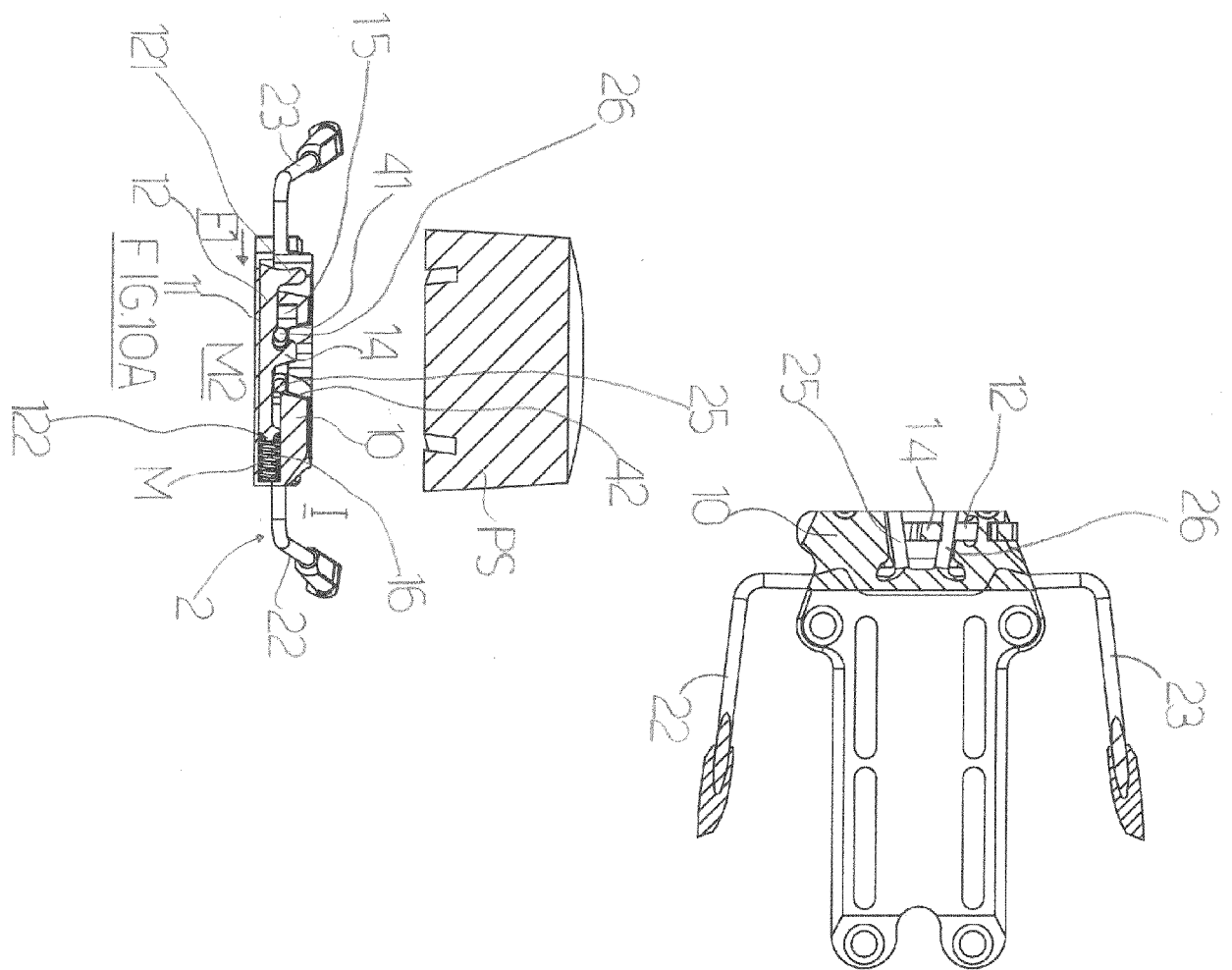
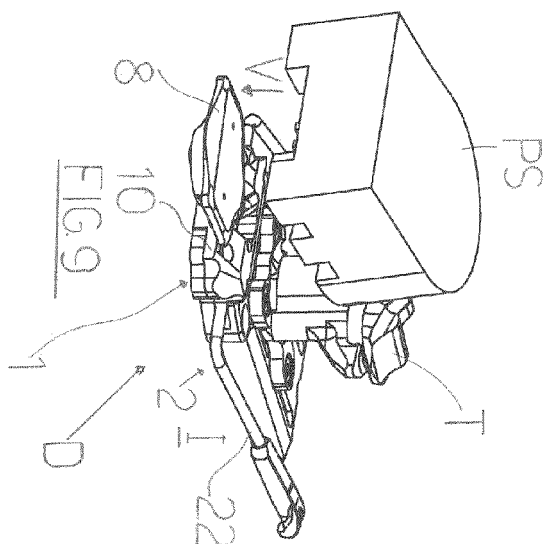
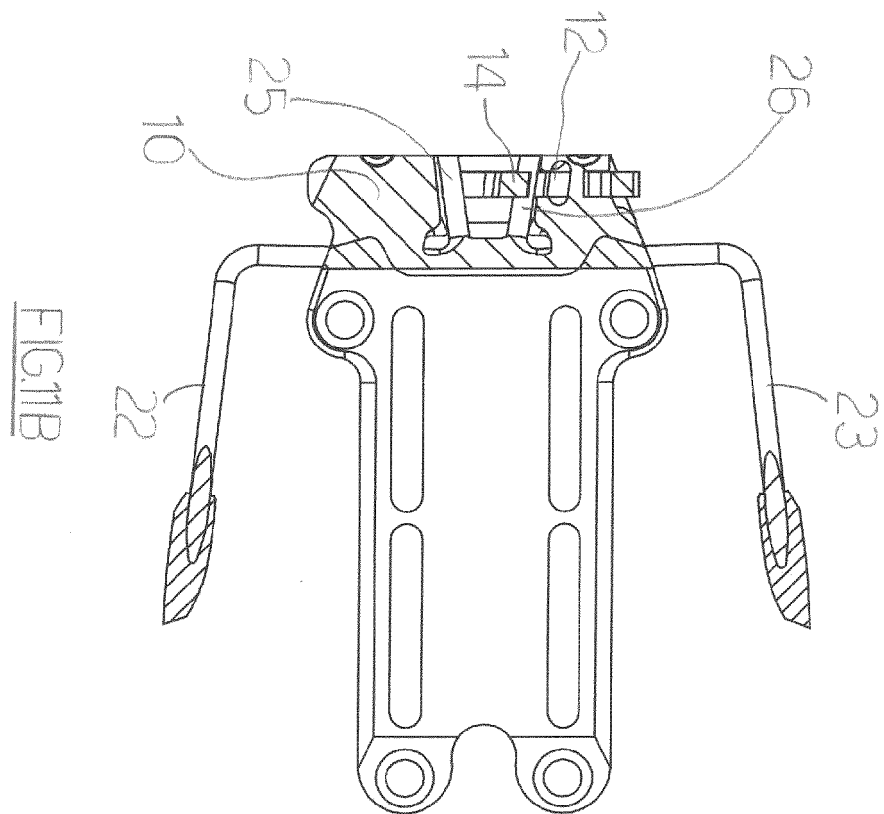
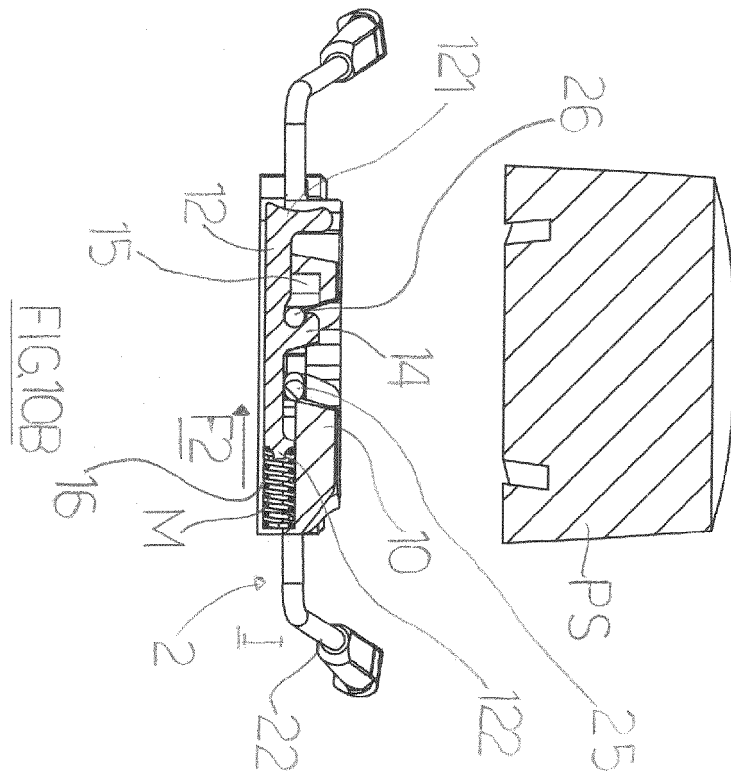


FIG 1A



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EUROPEAN SEARCH REPORT

Application Number
EP 19 15 9697

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EPO FORM 1503 03.82 (P04C01)

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
A	EP 2 762 209 A2 (MARKER DEUTSCHLAND GMBH [DE]) 6 August 2014 (2014-08-06) * paragraph [0070] - paragraph [0091]; figures 9,10 *	1-6	INV. A63C7/10 A63C9/086 A63C9/08
A	EP 3 120 903 A1 (FRITSCHI AG - SWISS BINDINGS [CH]) 25 January 2017 (2017-01-25) * paragraph [0059] - paragraph [0074]; figures 1-3 *	1-6	
A	FR 2 906 156 A1 (SKIS ROSSIGNOL SOC PAR ACTIONS [FR]) 28 March 2008 (2008-03-28) * page 8, line 14 - page 10, line 15; figures 5-9,10 *	1-6	
A	FR 2 638 654 A1 (SALOMON SA [FR]) 11 May 1990 (1990-05-11) * page 13, line 19 - page 14, line 39; figures 18,19 *	1-6	
A	US 4 676 520 A (GASQUET DENIS [FR] ET AL) 30 June 1987 (1987-06-30) * column 7, line 34 - column 8, line 23; figures 20-23 *	1-6	TECHNICAL FIELDS SEARCHED (IPC) A63C
A	AT 355 968 B (TYROLIA FREIZEITGERAETE [AT]) 10 April 1980 (1980-04-10) * page 3, line 18 - page 3, line 52; figures 1-4 *	1-6	
A	DE 24 29 719 A1 (GERTSCH AG) 23 January 1975 (1975-01-23) * page 7, line 8 - page 8, line 4; figures 1-3 *	1-6	
The present search report has been drawn up for all claims			
Place of search Munich		Date of completion of the search 18 July 2019	Examiner Murser, Michael
CATEGORY OF CITED DOCUMENTS X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document		T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document	

**ANNEX TO THE EUROPEAN SEARCH REPORT
ON EUROPEAN PATENT APPLICATION NO.**

EP 19 15 9697

5 This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report.
The members are as contained in the European Patent Office EDP file on
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18-07-2019

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
EP 2762209 A2	06-08-2014	DE 102013201725 A1	07-08-2014
		EP 2762209 A2	06-08-2014
		US 2014217703 A1	07-08-2014
		US 2015297974 A1	22-10-2015
EP 3120903 A1	25-01-2017	NONE	
FR 2906156 A1	28-03-2008	AT 431182 T	15-05-2009
		EP 1905492 A1	02-04-2008
		FR 2906156 A1	28-03-2008
		US 2008088114 A1	17-04-2008
FR 2638654 A1	11-05-1990	AT 400401 B	27-12-1995
		DE 3927875 A1	10-05-1990
		FR 2638654 A1	11-05-1990
		JP H02177982 A	11-07-1990
		US 5116073 A	26-05-1992
US 4676520 A	30-06-1987	DE 3401430 A1	23-08-1984
		FR 2541124 A1	24-08-1984
		US 4676520 A	30-06-1987
		US 4729577 A	08-03-1988
AT 355968 B	10-04-1980	NONE	
DE 2429719 A1	23-01-1975	AT 324187 B	25-08-1975
		CA 1005475 A	15-02-1977
		DE 2429719 A1	23-01-1975
		JP S5059127 A	22-05-1975
		JP S5622544 B2	26-05-1981
		US 3924864 A	09-12-1975