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(71) Applicant: **Atk Race S.R.L.**
41042 Fiorano Modenese (MO) (IT)

(72) Inventor: **INDULTI, GIOVANNI**
41042 FIORANO MODENESE (MO) (IT)

(74) Representative: **Dall'Olio, Christian et al**
INVENTION S.r.l.
Via delle Armi, 1
40137 Bologna (IT)

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(54) SKI BOOT FOR SKI MOUNTAINEERING

(57) Ski boot (1) for ski mountaineering, comprising a couple of front pins (P1), apt to engage holes of a toe (K); a couple of front seats (2) for receiving the pins (P1).

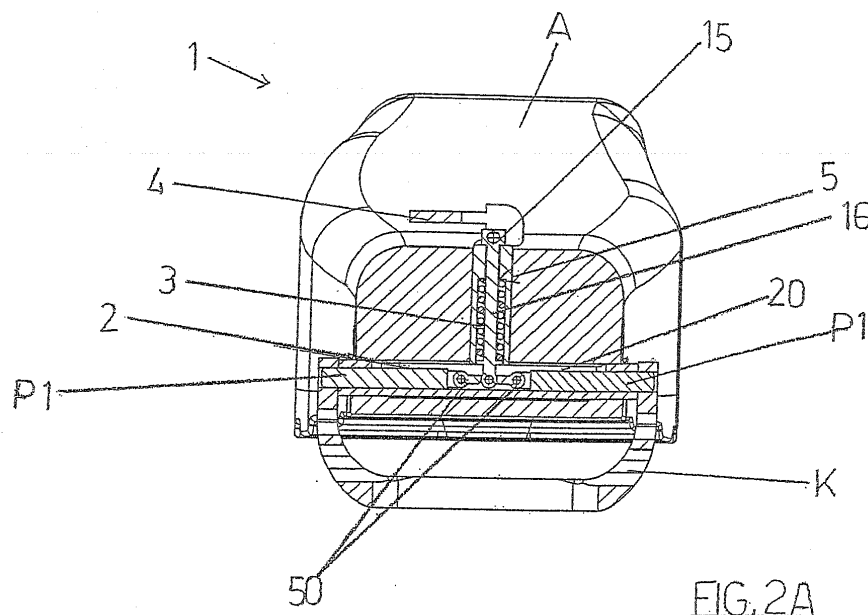
Each pin (P1) is movable in the seat (2) to take: a climbing, downhill and disengaging configuration.

The ski boot (1) comprises first connection means (5, 50) housed at least partially in the ski boot (1) and connected to the front pins (P1) and to control means (4).

The control means (4) are constrained to the first connection means (5, 50) so that they can take: an operating position, in which they act on the first connection

means (5, 50) so that the pins (P1) are moved in the climbing configuration; an intermediate position in which they act on the first connection means (5, 50) so that the pins (P1) are moved in the downhill configuration; and a not operating position in which they act on the first connection means (5, 50) so that the pins are moved in the disengaging configuration.

The first connection means (5, 50) are shaped so that, when the pins (P1) are in the downhill configuration and the ski is subjected to a stress higher than a critical one, the pins (P1) are disengaged from the hole of the toe.

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Description

[0001] The present invention relates to the technical field of ski mountaineering. In particular, the present invention relates to a ski boot for ski mountaineering.

[0002] There are known ski boots for ski mountaineering comprising two retractable pins at opposite side walls in the respective front portion, which are apt to engage a toe of a ski mountaineering coupling which is provided with suitable through holes.

[0003] In detail, the ski boot is provided with suitable seats inside which the corresponding bushes are housed, at said opposite front side walls. Elastic means associated to the pins are arranged inside the bushes, to act on the pins by stressing them outwards of the seat.

[0004] It is known that, for practicing ski mountaineering, when the skier is going downhill the respective ski boots are to be able to be disengaged from the corresponding couplings in case of stresses (for example if the skier falls down).

[0005] When instead the skier is climbing, the rear portion of the ski boot is disengaged from the corresponding coupling (heel piece), while the front portion has to be constrained in not removable manner by the corresponding coupling (toe), so that the ski boot can oscillate with respect to the toe according to a cross axis thereto.

[0006] To such aim, for example couplings for ski mountaineering are provided with a couple of suitable levers (or the like) suitably shaped so that they can intercept said pins, keeping them in the seat when the skier is going to remove the skis to disengage the ski boot from the corresponding coupling. Vice versa, the lever does not intercept the pins when the skier is going to go climbing: in this way, the pin can engage the corresponding hole in the toe in not removable manner, thus allowing the ski boot to oscillate with respect to the toe according to a cross axis thereto.

[0007] Anyway, the above described solution has drawbacks.

[0008] In fact, said ski boots strictly need couplings provided with means for acting, from outside inwards, on the pins of the ski boots, so that the action of the elastic means is hindered.

[0009] Such means, which for example comprise a couple of levers, are quite cumbersome and have a negative effect on the whole weight of the group formed by ski boot and coupling.

[0010] This drawback is especially relevant in sports competitions.

[0011] Moreover such means are subjected to impacts, which can lead to the damage thereof or to the fall of the skier.

[0012] The pins can be damaged accidentally as well; in fact, when the ski boot is disengaged from the corresponding coupling, they are stressed outside of the seat by the elastic means, and so, they are exposed to impacts. A similar situation occurs for example when, the skis being removed and put on the shoulders, a skier

walks on a rock route or is climbing: it is clear that the ski boot can impact on a rock, thus damaging a pin. Once the pin is damaged, it will be hardly able to be disengaged from the corresponding seat again, or however to engage it optimally.

[0013] Aim of the present invention is to overcome the just described drawbacks.

[0014] Such aim is reached with a ski boot for ski mountaineering according to the independent claims 1 and 9.

[0015] Advantageously, the ski boot for ski mountaineering proposed with the present invention solves the drawbacks of the prior art. In fact, the proposed ski boot does not need couplings provided with levers or other means as cumbersome as the ones known, and reduces significantly the weight of the group formed by coupling and ski boot with respect to the current state of art.

[0016] Such aspects are particularly significant in competitions, where the dimensions and the weight of the sports equipment have to be as small as possible to favour the user.

[0017] Furthermore, in an embodiment of the invention, with the proposed ski boot the user can act easily on the control means, for example by means of a ski stick to arrange the assembly ski boot-coupling for a downhill, a climbing, or for disengaging the ski boot from the coupling (by acting through the control means on the front pins, and according to a variant, on the rear pins as well).

[0018] Moreover, the pins of the proposed ski boot are not exposed to impacts when the ski boot is disengaged from the corresponding coupling (for example when the user is climbing or walks on a rock route). In fact, in this case the pins can be kept in the corresponding seats, thus avoiding to be subjected to damages, which often occurred in prior art.

[0019] Specific embodiments of the invention and other advantages will be clear in the following disclosure by means of the appended drawings, in which:

- figure 1 shows a partial, perspective and schematic view of a ski boot for ski mountaineering according to a first embodiment of the invention, in a first configuration;
- figure 2 and 3 show a side and front view respectively, of the ski boot of figure 1;
- figures 2A and 3A show section A-A of figure 2 and section B-B of figure 3, respectively;
- figures 4, 5 and 6 show views similar to the ones of figures 1, 2 and 3 respectively, in a second configuration;
- figures 5A and 6A show section A-A of figure 5 and section B-B of figure 6, respectively;
- figures 7, 8 and 9 show views similar to the ones of figures 1, 2 and 3 respectively, in a third configuration;

tion;

- figures 8A and 9A show section A-A of figure 8 and section B-B of figure 9, respectively;
- figure 10 shows a side schematic view of a ski boot for ski mountaineering according to a second embodiment of the invention, in a first configuration;
- figure 11 shows a front view of the ski boot of figure 10;
- figures 10A and 11A show section C-C of figure 10 and section B-B of figure 11, respectively;
- figure 12 shows a schematic perspective view of the ski boot for ski mountaineering of figure 10, in a second configuration;
- figures 13 and 14 show a front and side view respectively, of the ski boot of figure 12;
- figures 13A and 14A show section B-B of figure 13 and section C-C of figure 14, respectively;
- figures 15, 16 and 17 show views similar to the ones in figures 12, 13, 14 respectively, in a third configuration;
- figures 16A and 17A show section B-B of figure 16 and section C-C of figure 17, respectively;
- figure 18 shows a partial, perspective and schematic view of a ski boot for ski mountaineering according to another embodiment of the invention, in a first configuration;
- figures 19 and 20 show a side and front view respectively, of the ski boot of figure 18;
- figures 19A and 20A show section C-C of figure 19 and section D-D of figure 20, respectively;
- figures 21, 22 and 23 show views similar to the ones of figures 18, 19 and 20 respectively, in a second configuration;
- figures 22A and 23A show section C-C of figure 22 and section D-D of figure 23, respectively;
- figures 24, 25 and 26 show views similar to the ones of figures 18, 19 and 20 respectively, in a third configuration.
- figures 25A and 26A show section C-C of figure 25 and section D-D of figure 26, respectively.

[0020] Referring to the appended figures, with (1) it is

indicated a ski boot for ski mountaineering according to the present invention.

[0021] The ski boot (1) comprises: a couple of front pins (P1), provided in the front portion (A) of the ski boot (1) at opposed side walls, apt to engage corresponding holes of a toe (K) for ski mountaineering; a couple of front seats (2), provided in the front portion (A) of the ski boot (1), each one receiving one of the front pins (P1) (see for example fig. 2A).

[0022] Each front pin (P1) is movable in the corresponding seat (2) to assume: a climbing configuration (when the user has to go climbing), in which it projects from the corresponding seat (2) to engage in not removable manner a hole of a toe (K) for ski mountaineering and to allow the ski boot (1) to oscillate with respect to the axis of the same front pin (P1); a downhill configuration (when the user has to go downhill), in which it projects from the corresponding seat (2) to engage removably a hole of a toe (K) for ski mountaineering; and a disengaging configuration (when the user has to disengage the ski boot (1) from the corresponding coupling) in which it is in the corresponding seat (2) so that it is disengaged from the hole of the toe (K).

[0023] In particular, the ski boot (1) comprises: control means (4); first connection means (5, 50) housed at least partially in the ski boot (1) and connected to the front pins (P1) and to the control means (4).

[0024] Furthermore, the control means (4) are constrained to the first connection means (5, 50) so that they can assume: an operating position, in which they act on the first connection means (5, 50) so that the front pins (P1) are moved in the respective climbing configuration (see figs. 1-3, 2A, 3A, 18-20, 19A, 20A); an intermediate position in which they act on the first connection means (5, 50) so that the front pins (P1) are moved in the respective downhill configuration (see fig. 4-6, 5A, 6A, 21-23, 22A, 23A); and a not operating position in which they act on the first connection means (5, 50) so that the front pins (P1) are moved in the respective disengaging configuration (see figs. 7-9, 8A, 9A, 24-26, 25A, 26A).

[0025] In detail, the first connection means (5, 50) are shaped so that, when the front pins (P1) are in the downhill configuration and the ski is subjected to a stress higher than a critical one, the front pins (P1) are disengaged from the respective hole of the toe (K), thus allowing the ski boot (1) to be disengaged from the toe (K).

[0026] Therefore, advantageously, thanks to the control means (4), a user can easily arrange the ski boot (1) for use, when is going to go climbing, downhill, or can disengage the ski boot from the corresponding coupling. For example, a user can act on the control means (4) by means of a ski stick; such aspect is particularly practical.

[0027] Moreover, thanks to the invention, the ski boot (1)-toe (K) assembly is less cumbersome and less heavy than prior art.

[0028] Preferably the ski boot (1) comprises first elastic means (3) associated to the first connection means (5, 50).

[0029] Advantageously, when the front pins (P1) are in the downhill configuration, such first elastic means (3) provide that the ski boot (1) is disengaged from toe (K) in case the ski is subjected to a stress higher than a critical one.

[0030] In a preferred embodiment of the invention, the first connection means (5, 50) comprise a first bar element (5) (see figs. 2A, 3A, 19A, 20A) comprising at least an end portion (15) and a body portion (16); the first bar element (5) is constrained through the end portion (15) to the control means (4) so that by moving these last ones, the first bar element (5) is moved consequently along its own axis (or possibly a direction parallel to its own axis), to determine the movement of the front pins (P1).

[0031] Referring to the example in the figures, the first bar element (5) is moved inside the ski boot (1) when the control means (4) are brought from the respective not operating position (disengaging situation) to the respective intermediate position (downhill situation) or to the respective operating position (climbing position); vice versa they are moved outwards of the ski boot (1).

[0032] Yet referring to the appended figures, the first elastic means (3) are associated to the first bar element (5) so that it is stressed inwards of the ski boot (1). The first elastic means (3) allow the ski boot (1) to be disengaged from the respective coupling when the user is going downhill and the ski is subjected to a determined stress (for example following a fall).

[0033] According to a particular embodiment shown in figures 18-26A, the first bar element (5) is a wire. In particular, in such a case, the first bar element (5) can work in traction and pressure. Advantageously the first elastic means (3) are not needed to allow the ski boot (1) to be disengaged from the toe (K) in case during a downhill the ski is subjected to a stress higher than a critical one.

[0034] According to a preferred embodiment, the front seats (2) are communicating with respect to each other and define a first channel (20) in the front portion (A) of the ski boot (1) (see figs. 2A, 5A, 8A, 19A, 22A, 25A). In this case, the first connection means (5, 50) comprise further: two first piston rod elements (50), each one hinged through a first end to the body portion (16) of the first bar element (5), and associated through the second end to a front pin (P1).

[0035] In particular, the two first piston rod elements (50) are arranged so that by moving the control means (4), the respective second ends approach and move away mutually in the first channel (20) to determine the movement of the front pins (P1).

[0036] Preferably, the first two piston rod elements (50) are hinged around the same axis passing through the first bar element (5) and are arranged obliquely thereto.

[0037] Specifically, in the shown embodiment, the second ends of the two first piston rod elements (50) move away mutually when the control means (4) are brought from the respective not operating position (disengaging situation) to the respective intermediate position (down-

hill position) or to the respective operating position (climbing position); vice versa they mutually approach.

[0038] According to the preferred embodiment shown, the first piston rod elements (50) are arranged symmetrically with respect to the development axis of the first bar element (5) (see figs. 2A, 5A, 8A, 19A, 22A, 25A).

[0039] Referring to the appended figures, the second ends of the first two piston rod elements (50) are articulated to the first front pins (P1) (see figs. 2A, 5A, 8A, 19A, 22A, 25A).

[0040] According to another variant, not shown, the first connection means (5, 50) can comprise two first connection elements (for example shaped as pin or piston), arranged in the first channel (20), each one connected to a front pin (P1) and to the second end of a first piston rod element (50).

[0041] In a second embodiment (see for example fig. 10), the ski boot (1) comprises further: a couple of rear pins (P2), provided in the rear portion (R) of the ski boot (1) at opposed side walls, apt to engage corresponding holes (in circular, oval or elliptical shape) of a heel piece (T) for ski mountaineering. Moreover the ski boot (1) comprises a couple of rear seats (6), provided in the rear portion (R) of the ski boot (1), each one receiving a rear pin (P2), respectively.

[0042] In particular, each rear pin (P2) is movable in the corresponding seat (6) to assume: a downhill configuration, in which it projects from the corresponding seat (6) to engage removably a hole of a heel piece (T) for ski mountaineering; a disengaging configuration, in which it is disengaged from said hole of the heel piece (T) and is arranged in the corresponding seat (6); a climbing configuration, in which it projects from the corresponding seat (6), it is disengaged from the hole of the heel piece (T) and can rest thereon.

[0043] In detail, the ski boot (1) comprises further: second connection means (7, 70) housed in the ski boot (1) and connected to the rear pins (P2) and to the control means (4) so that: when these last ones are brought in the respective operating position, they act on the second connection means (7, 70) so that the rear pins (P2) are moved in the respective climbing position (see figs. 10, 11, 10A, 11A); when the control means (4) are brought in the respective intermediate position, they act on the second connection means (7, 70), so that the rear pins (P2) are moved in the respective downhill configuration (see figs. 15-17, 16A, 17A); and when the control means (4) are brought in the respective not operating position, they act on the second connection means (7, 70), so that the rear pins (P2) are moved in the respective disengaging configuration (see figs. 12-14, 13A, 14A).

[0044] Moreover, the second connection means (7, 70) are shaped so that, when the rear pins (P2) are in the downhill configuration and the ski is subjected to a stress higher than a critical one, the rear pins (P2) are disengaged from the respective hole of the heel piece (T), thus allowing the ski boot (1) to be disengaged from the heel piece (T).

[0045] Therefore, advantageously, according to such embodiment a user can easily act on the control means (4) to move the rear pins (P2) as well, together and according to the front pins (P1).

[0046] Also in this case, clearly, the user can use for example the ski stick to act on the control means (4) (if the control means (4) are in the outer portion of the ski boot).

[0047] According to another embodiment, the invention relates to a ski boot (1) for ski mountaineering comprising: a couple of rear pins (P2), provided in the rear portion (R) of the ski boot (1) at opposed side walls, apt to engage corresponding holes of a heel piece (T) for ski mountaineering; a couple of front seats (2) provided in the front portion (A) of the ski boot (1), each one receiving one of the front pins (P1).

[0048] The ski boot (1) comprises also a couple of rear seats (6), provided in the rear portion (R) of the ski boot (1), each one receiving a rear pin (P2).

[0049] In detail, each rear pin (P2) is movable in the corresponding seat (6) to assume: a downhill configuration, in which it projects from the corresponding seat (6) to engage removably a hole of a heel piece (T) for ski mountaineering; a disengaging configuration in which it is disengaged from said hole of the heel piece (T) and is arranged in the corresponding seat (6); a climbing configuration, in which it projects from the corresponding seat, it is disengaged from the hole of the heel piece (T) and can rest thereon.

[0050] In particular, the ski boot (1) comprises: control means (4); second connection means (7, 70) housed in the ski boot (1) and connected to the rear pins (P2) and to the control means (4) so that: when these last ones are brought in the respective operating position, they act on the second connection means (7, 70) so that the rear pins (P2) are moved in the respective climbing configuration; when the control means (4) are brought in the respective intermediate position, they act on the second connection means (7, 70) so that the rear pins (P2) are moved in the respective downhill configuration; and when the control means (4) are brought in the respective not operating position, they act on the second connection means (7, 70) so that the rear pins (P2) are moved in the respective disengaging configuration.

[0051] Moreover, the second connection means (7, 70) are shaped so that when the rear pins (P2) are in the downhill configuration and the ski is subjected to a stress higher than a critical one, the rear pins (P2) are disengaged from the respective hole of the heel piece (T), thus allowing the ski boot (1) to be disengaged from the heel piece (T).

[0052] The just described embodiment has the same advantages as the one previously described, which mentioned both rear pins (P2) and front pins (P1).

[0053] The following details relate to all the described embodiments which comprise rear pins (P2).

[0054] Preferably, the ski boot (1) comprises second elastic means (8) associated to the second connection

means (7, 70).

[0055] According to an example shown in the figures, said rear seats (6) are communicating with respect to each other and define a second channel (60) in the rear portion (R) of the ski boot (1).

[0056] The second connection means (7, 70) comprise for example: a second bar element (7) connected to the control means (4); two second piston rod elements (70), each one hinged through a first end to the second bar element (7) and associated through the second end to a rear pin (P2), to determine the movement thereof.

[0057] The two second piston rod elements (70) are arranged that by moving the control means (4), the respective second ends approach and move away mutually in the second channel (60) to determine the movement of the rear pins (P2).

[0058] Preferably, the second two piston rod elements (70) are hinged around the same axis passing through the second bar element (7) and are arranged obliquely thereto.

[0059] For example, the second ends of the two second piston rod elements (70) move away mutually when the control means (4) are brought from the respective not operating position (disengaging situation) to the respective intermediate position (downhill position) or to the respective operating position (climbing position); vice versa they mutually approach.

[0060] According to the preferred embodiment shown, the second piston rod elements (70) are arranged symmetrically with respect to the development axis of the second bar element (7) (see for example fig. 17A).

[0061] According to the figures, the second ends of the second piston rod elements (70) are constrained to the rear pins (P2).

[0062] According to another variant, not shown, the second connection means (7, 70) can comprise two first connection elements (for example shaped as pin or piston), arranged in the second channel (60), each one connected to a rear pin (P2) and to the second end of a second piston rod element (70).

[0063] According to the preferred embodiment of the invention, the second elastic means (8) are associated to the second bar element (7) (see for example fig. 16A).

[0064] The second bar element (7) can be a wire. In particular, in such a case, the second bar element (7) can work in traction and pressure. Advantageously, the second elastic means (3) are not needed to allow the ski boot (1) to be disengaged from the heel piece (T) in case during a downhill the ski is subjected to a stress higher than a critical one.

[0065] According to the drawings, the second bar element (7) is transverse to the first bar element (5) (see for example fig. 13A).

[0066] Referring to the embodiment shown in figs. 11A, 13A, 16A the ski boot (1) comprises further a wire element (72) which connects the control means (4) and the second piston bar element (7).

[0067] Clearly, also the embodiment providing only the

rear pins (P2) can be provide with the front pins (P1), according to all the specifics just described for the first embodiment, according to any possible combination.

[0068] For example, the control means (4) comprise at least a lever and a cam, controlled by the lever, which are movable to define said operating, intermediate and not operating positions or as many others are desired.

[0069] According to another variant, not shown, the control means (4) comprise a lever and a cable, this last one being connected to the first bar element (5), to the second bar element (7) and to the lever, which can be actuated to define said operating, intermediate and not operating positions.

[0070] According to another variant, not shown, the control means (4) comprise a rotating switch and a cable, connected to the first bar element (5) and the second bar element (7), which can be actuated to define said operating, intermediate and not operating positions. As an alternative, an expert in the filed will be able to provide any other means to carry out the same function.

[0071] Generally, the control means (4) can be arranged anywhere on the ski boot (1).

[0072] Generally, the first elastic means (3) and/or the second elastic means (8) can be adjusted to vary their disengaging limit value. Therefore the ski boot (1) can be provided with a suitable adjustment system of said first and/or second elastic means (3, 8), in order to adjust them.

Claims

1. Ski boot (1) for ski mountaineering, comprising:

a couple of front pins (P1), provided in the front portion (A) of the ski boot (1) at opposed side walls, apt to engage corresponding holes of a toe (K) for ski mountaineering;

a couple of front seats (2), provided in the front portion (A) of the ski boot (1), each one for receiving one of the front pins (P1);

each front pin (P1) being movable in the corresponding seat (2) to assume: a climbing configuration, in which it projects from the corresponding seat (2) to engage in not removable manner a hole of a toe (K) for ski mountaineering and to allow the ski boot (1) to oscillate with respect to the axis of the same front pin (P1); a downhill configuration, in which it projects from the corresponding seat (2) to engage removably a hole of a toe (K) for ski mountaineering; a disengaging configuration in which it is in the corresponding seat (2) so that it is disengaged from said hole of the toe (K);

the ski boot (1) being **characterized in that** it comprises:

control means (4);

first connection means (5, 50) housed at least partially in the ski boot (1) and connected to the front pins (P1) and to the control means (4);

the control means (4) being constrained to the first connection means (5, 50) so that they can assume: an operating position, in which they act on the first connection means (5, 50) so that the front pins (P1) are moved in the respective climbing configuration; an intermediate position in which they act on the first connection means (5, 50) so that the front pins (P1) are moved in the respective downhill configuration; and a not operating position in which they act on the first connection means (5, 50) so that the front pins (P1) are moved in the respective disengaging configuration;

the first connection means (5, 50) being shaped so that, when the front pins (P1) are in the downhill configuration and the ski is subjected to a stress higher than a critical one, the front pins (P1) are disengaged from the respective hole of the toe (K), thus allowing the ski boot (1) to be disengaged from the toe (K).

2. Ski boot (1) according to the preceding claim, comprising first elastic means (3) associated to the first connection means (5, 50).

3. Ski boot (1) according to any one of the preceding claims, wherein the first connection means (5, 50) comprise a first bar element (5) comprising at least an end portion (15) and a body portion (16); the first bar element (5) being constrained through the end portion (15) to the control means (4) so that by moving these last ones, the first bar element (5) is moved consequently along its own axis, to determine the movement of the front pins (P1).

4. Ski boot (1) according to claims 2 and 3, wherein the first elastic means (3) are associated to the first bar element (5).

5. Ski boot (1) according to claim 3 or 4, wherein the first bar element (5) is a wire.

6. Ski boot (1) according to claim 3 or 4 or 5, wherein the front seats (2) are communicating with respect to each other and define a first channel (20) in the front portion (A) of the ski boot (1); and wherein the first connection means (5, 50) further comprise: two first piston rod elements (50), each one hinged through a first end to the body portion (16) of the first bar element (5) and associated through the second end to a front pin (P1); the first two piston rod elements (50) being arranged so that by moving the

control means (4), the respective second ends approach and move away mutually in the first channel (20), to determine the movement of the front pins (P1).

7. Ski boot (1) according to the preceding claim, wherein the first piston rod elements (50) are arranged symmetrically with respect to the development axis of the first bar element (5).

8. Ski boot (1) according to any one of the preceding claims, further comprising: a couple of rear pins (P2), provided in the rear portion (R) of the ski boot (1) at opposed side walls, apt to engage corresponding holes of a heel piece (T) for ski mountaineering:

a couple of rear seats (6), provided in the rear portion (R) of the ski boot (1), each one for receiving a rear pin (P2) respectively;

each rear pin (P2) being movable in the corresponding seat (6) to assume: a downhill configuration, in which it projects from the corresponding seat (6) to engage removably a hole of a heel piece (T) for ski mountaineering; a disengaging configuration, in which it is disengaged from said hole of the heel piece (T) and is arranged in the corresponding seat (6); a climbing configuration, in which it projects from the corresponding seat (6), it is disengaged from the hole of the heel piece (T) and can rest thereon;

the ski boot (1) further comprising second connection means (7, 70) housed in the ski boot (1) and connected to the rear pins (P2) and to the control means (4) so that: when these last ones are brought in the respective operating position, they act on the second connection means (7, 70) so that the rear pins (P2) are moved in the respective climbing position; when the control means (4) are brought in the respective intermediate position, they act on the second connection means (7, 70) so that the rear pins (P2) are moved in the respective downhill configuration; and

when the control means (4) are brought in the respective not operating position, they act on the second connection means (7, 70) so that the rear pins (P2) are moved in the respective disengaging configuration;

the second connection means (7, 70) being shaped so that, when the rear pins (P2) are in the downhill configuration and the ski is subjected to a stress higher than a critical one, the rear pins (P2) are disengaged from the respective hole of the heel piece (T), thus allowing the ski boot (1) to be disengaged from the heel piece (T).

9. Ski boot (1) for ski mountaineering, comprising:

a couple of rear pins (P2), provided in the rear portion (R) of the ski boot (1) at opposed side walls, apt to engage corresponding holes of a heel piece (T) for ski mountaineering:

a couple of rear seats (6), provided in the rear portion (R) of the ski boot (1), each one for receiving a rear pin (P2) respectively; each rear pin (P2) being movable in the corresponding seat (6) to assume: a downhill configuration, in which it projects from the corresponding seat (6) to engage removably a hole of a heel piece (T) for ski mountaineering; a disengaging configuration in which it is disengaged from said hole of the heel piece (T) and is arranged in the corresponding seat (6); a climbing configuration, in which it projects from the corresponding seat, it is disengaged from the hole of the heel piece (T) and can rest thereon; the ski boot (1) being **characterized in that** it comprises:

control means (4);

second connection means (7, 70) housed in the ski boot (1) and connected to the rear pins (P2) and to the control means (4) so that: when these last ones are brought in a respective operating position, they act on the second connection means (7, 70) so that the rear pins (P2) are moved in the respective climbing configuration; when the control means (4) are brought in a respective intermediate position, they act on the second connection means (7, 70) so that the rear pins (P2) are moved in the respective downhill configuration; and when the control means (4) are brought in a respective not operating position, they act on the second connection means (7, 70) so that the rear pins (P2) are moved in the respective disengaging configuration; the second connection means (7, 70) being shaped so that, when the rear pins (P2) are in the downhill configuration and the ski is subjected to a stress higher than a critical one, the rear pins (P2) are disengaged from the respective hole of the heel piece (T), thus allowing the ski boot (1) to be disengaged from the heel piece (T).

10. Ski boot (1) according to claim 8 or 9, comprising second elastic means (8) associated to the second connection means (7, 70).

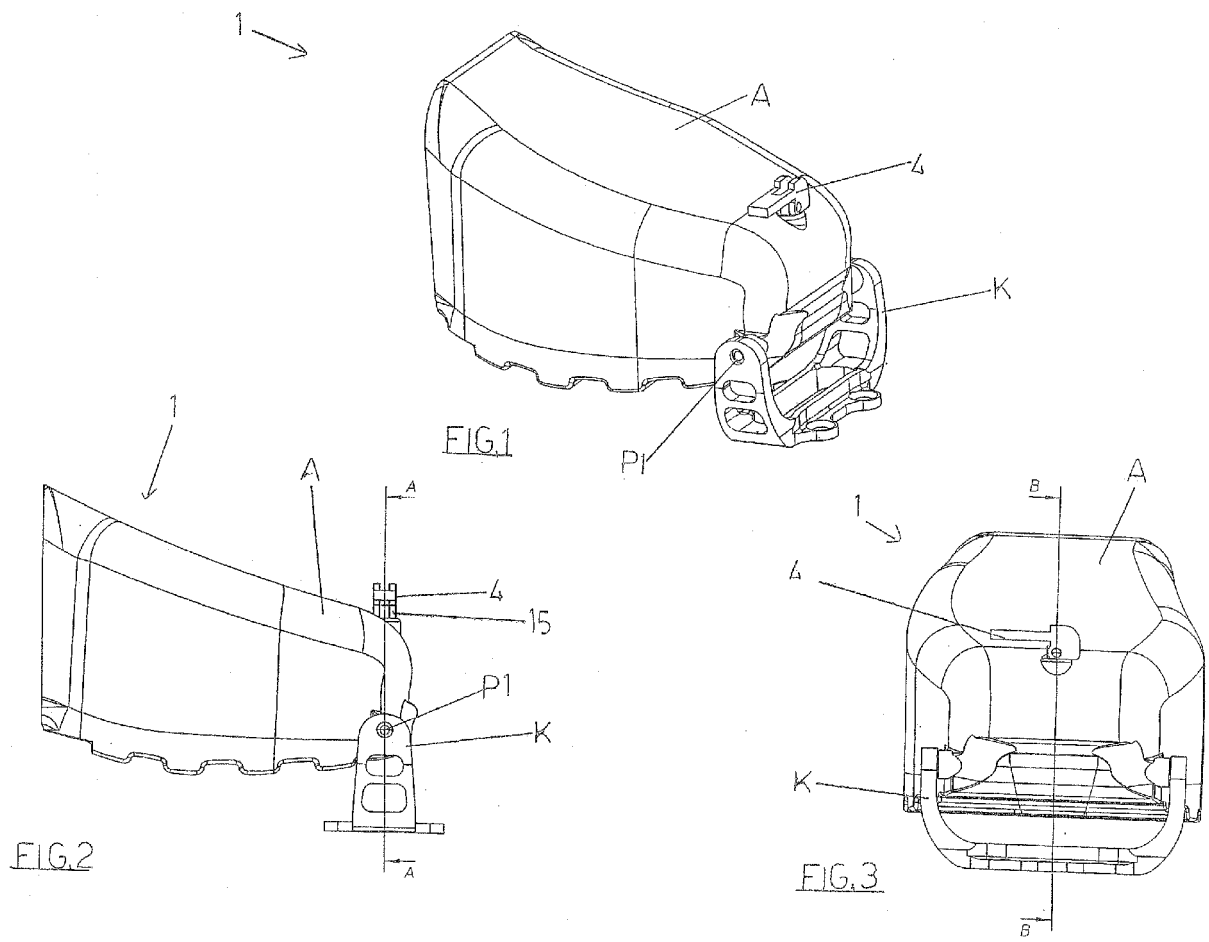
11. Ski boot (1) according to any one of claims 8 to 10, wherein the second connection means (7, 70) comprise a second bar element (7) comprising at least an end portion and a body portion; the second bar element (7) being constrained through the end portion to the control means (4) so that by moving these last ones, the second bar element (7) is moved consequently along its own axis, to determine the movement of the rear pins (P2). 5
12. Ski boot (1) according to claims 10 and 11, wherein the second elastic means (8) are associated to the second bar element (7). 10
13. Ski boot (1) according to claim 11 or 12, wherein the second bar element (7) is a wire. 15
14. Ski boot (1) according to any one of claims 11 to 13, wherein said rear seats (6) are communicating with respect to each other and define a second channel (60) in the rear portion (R) of the ski boot (1); the second connection means (7, 70) comprise two second piston rod elements (70), each one hinged through a first end to the second bar element (7) and associated through the second end to a rear pin (P2), to determine the movement of this last one; the two second piston rod elements (70) being arranged so that by moving the control means (4), the respective second ends approach and move away mutually in the second channel (60), to determine the movement of the rear pins (P2). 20 25 30
15. Ski boot (1) according to any one of claims 11 to 14, further comprising a wire element (72) which connects the control means (4) and the second bar element (7). 35

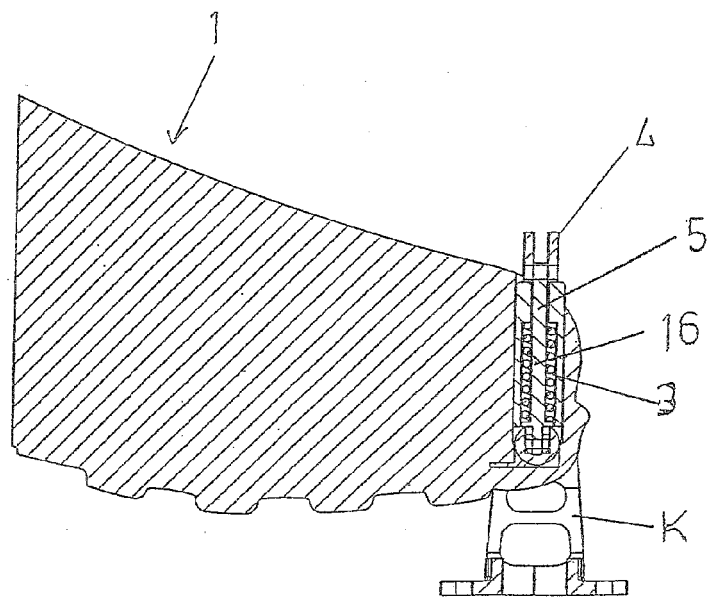
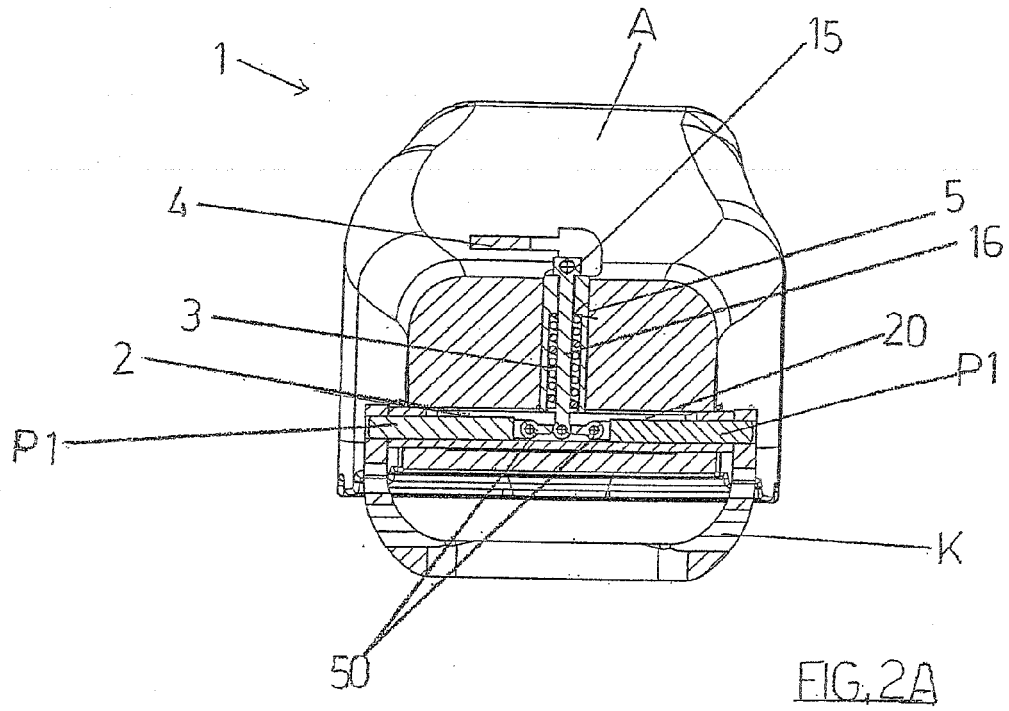
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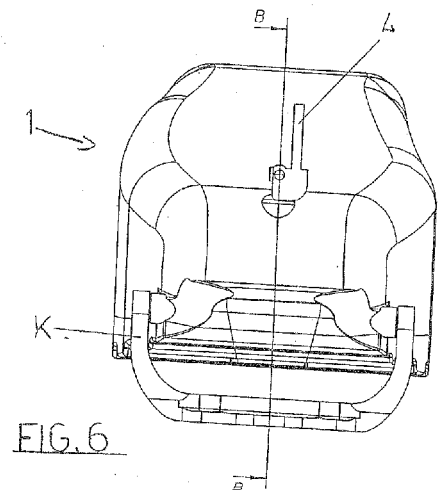
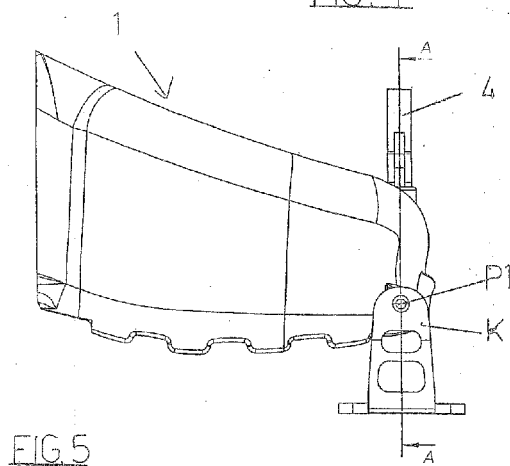
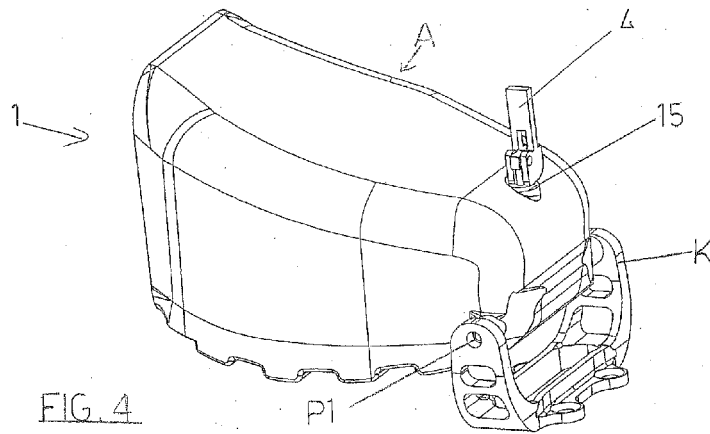
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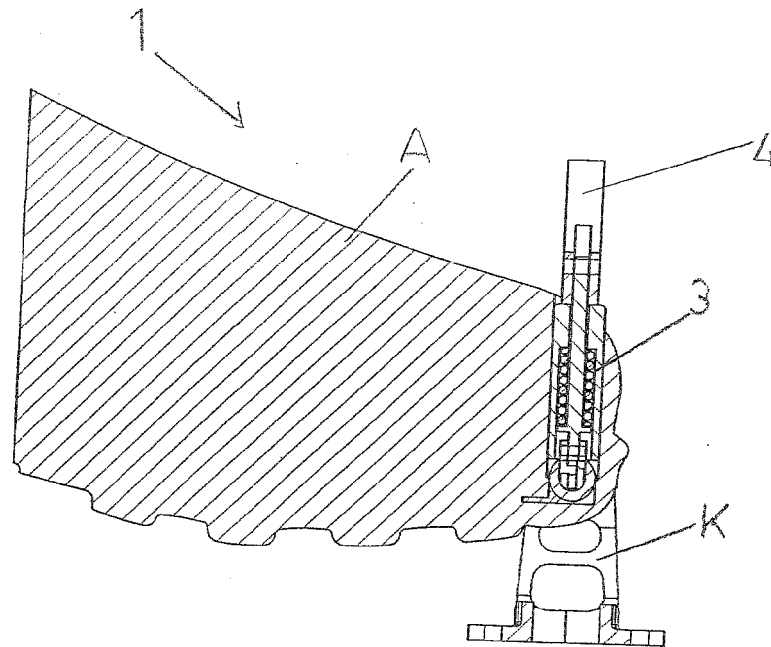
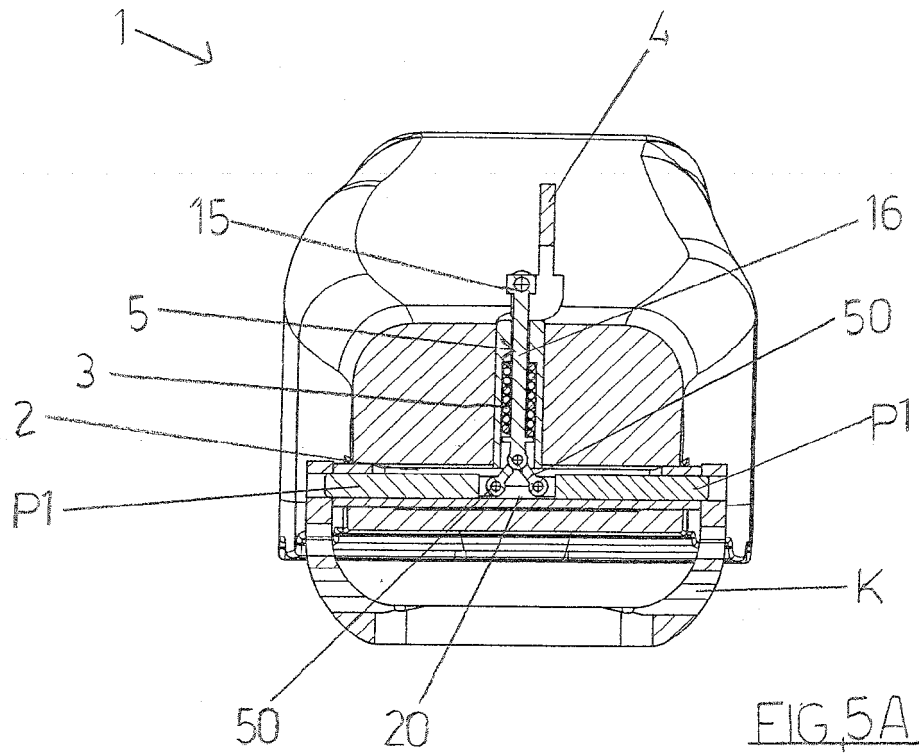
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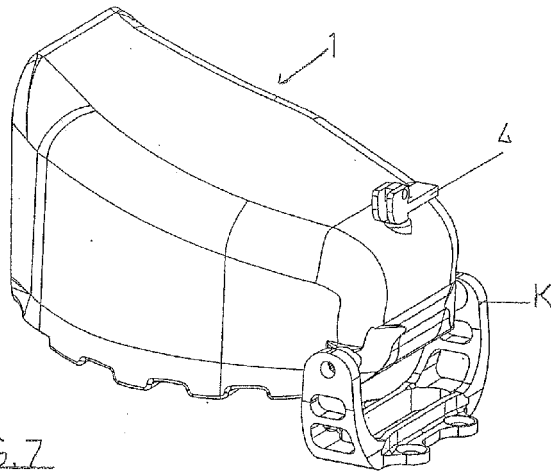


FIG. 7

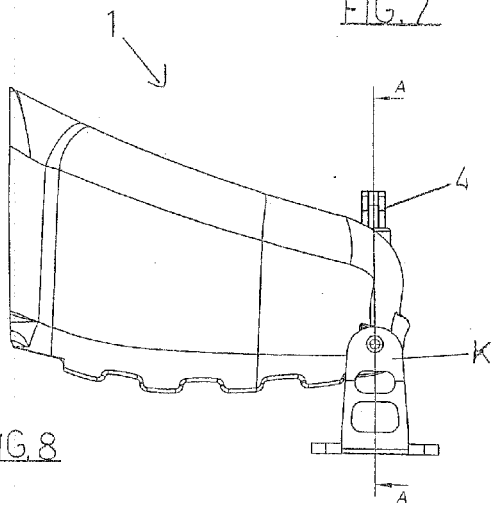


FIG. 8

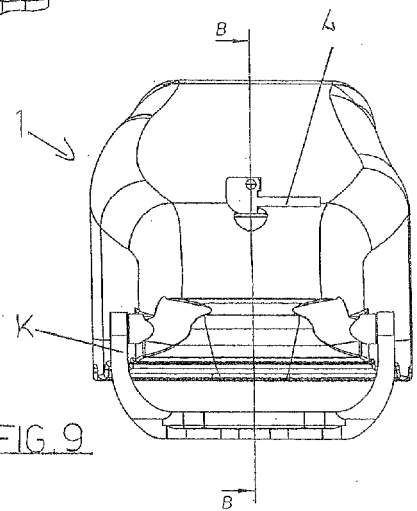


FIG. 9

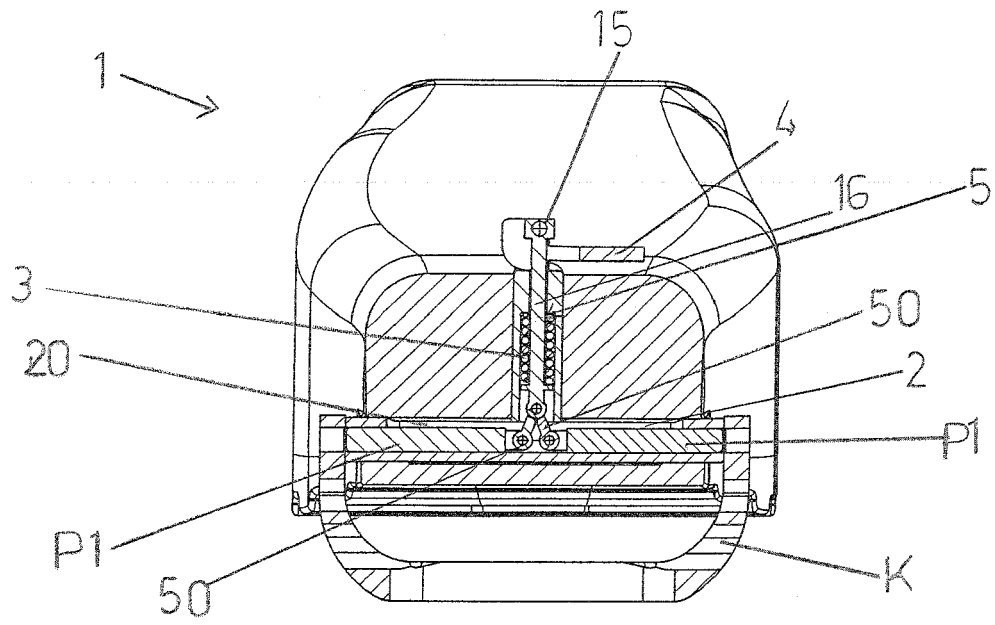


FIG. 8A

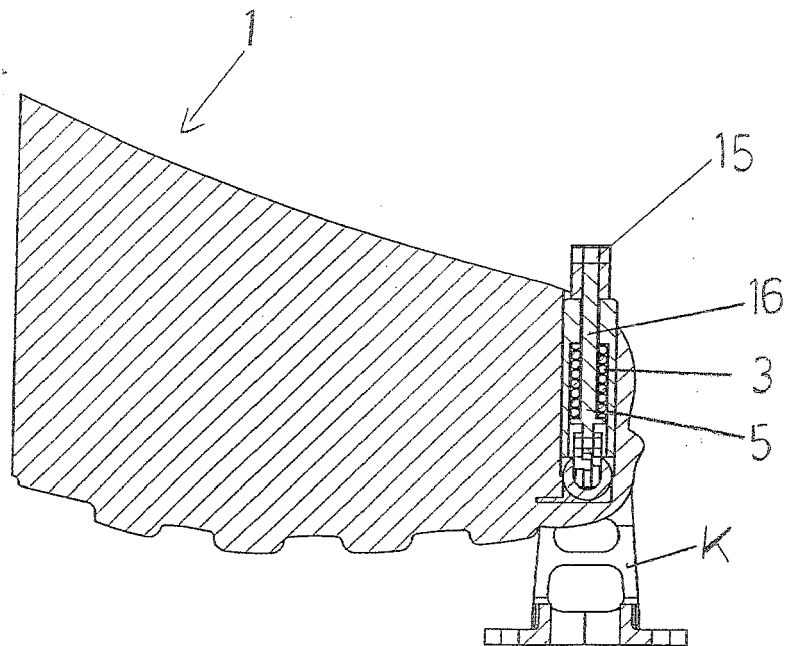
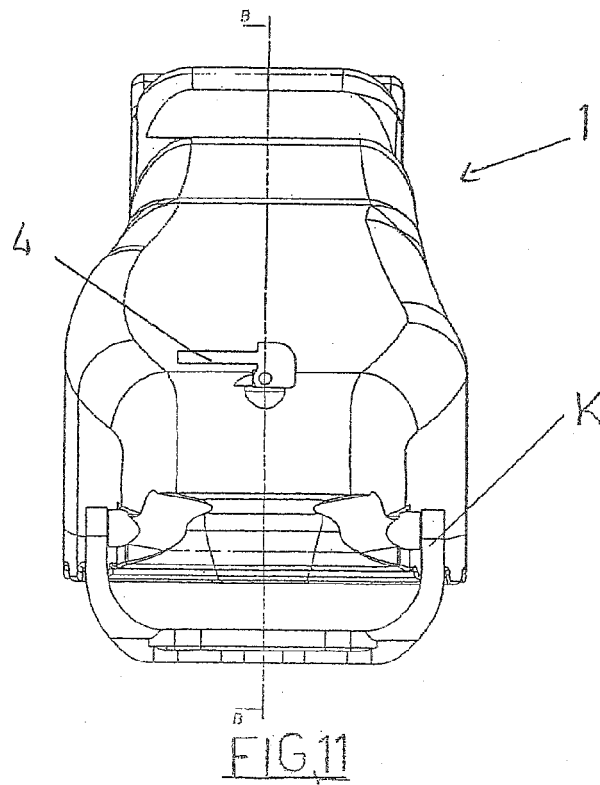
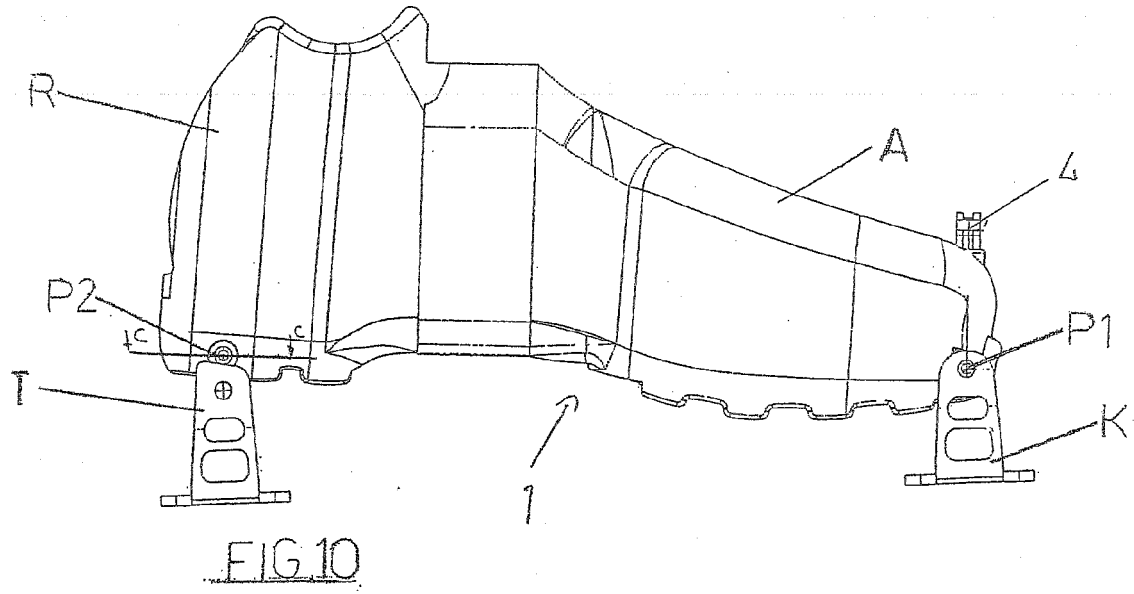
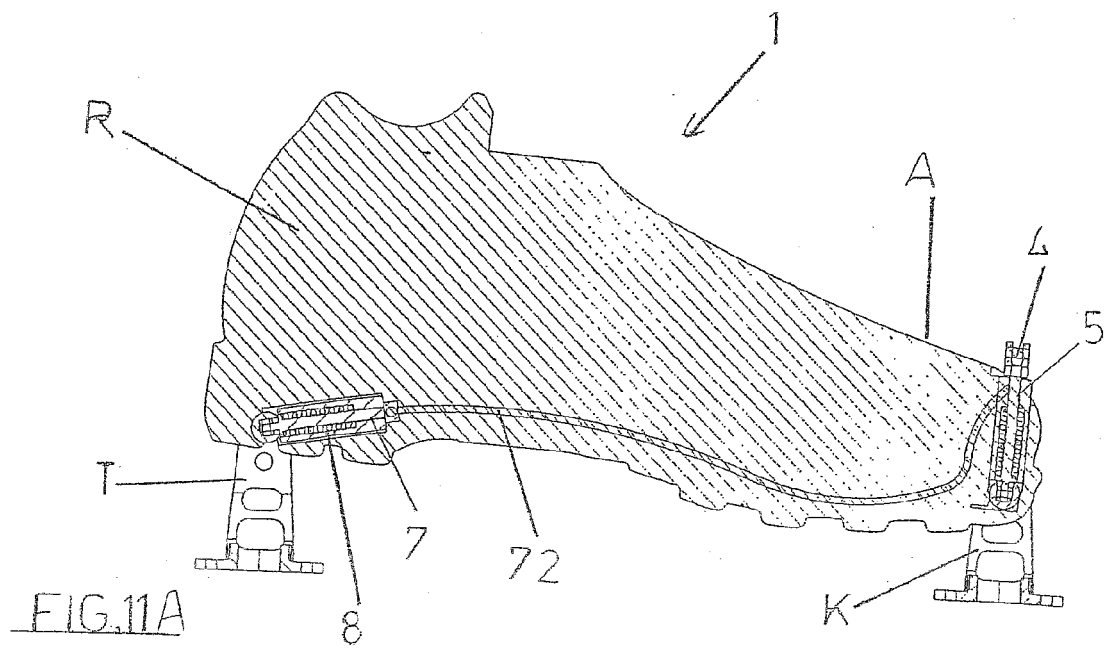
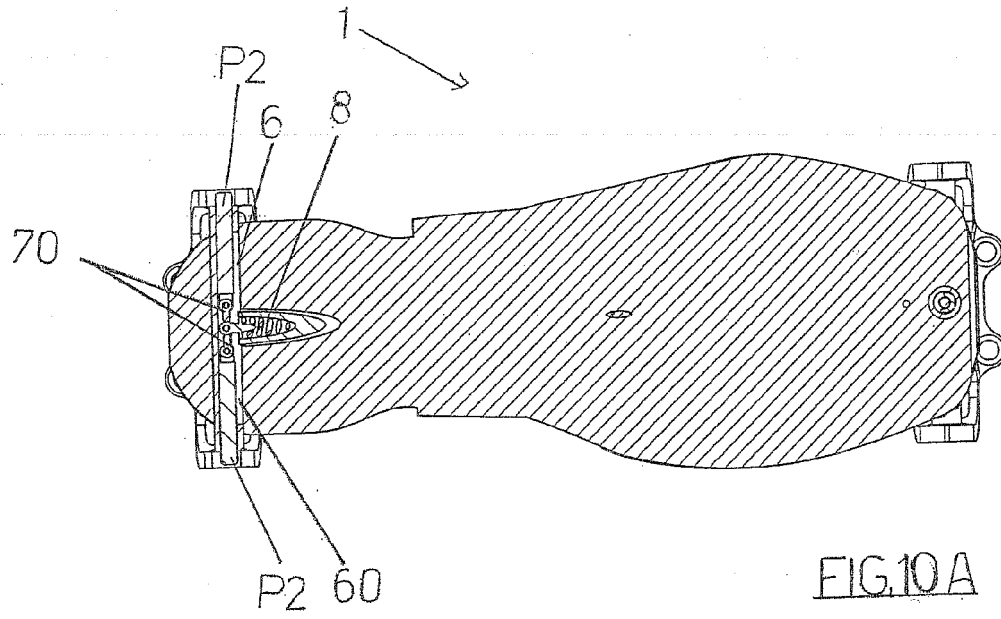


FIG. 9A





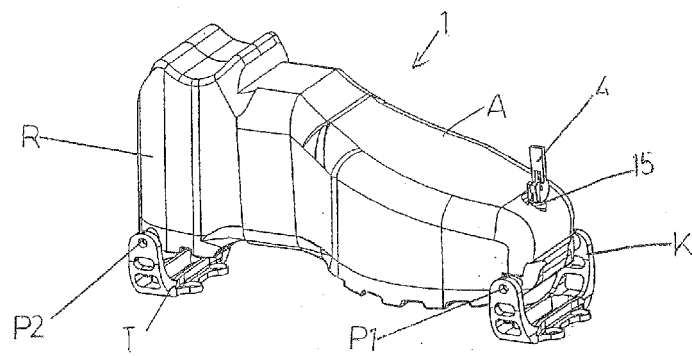


FIG. 12

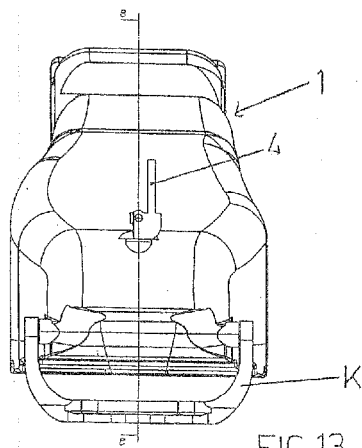


FIG. 13

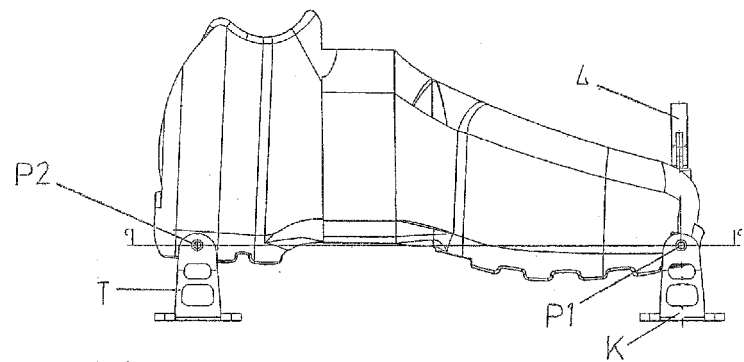
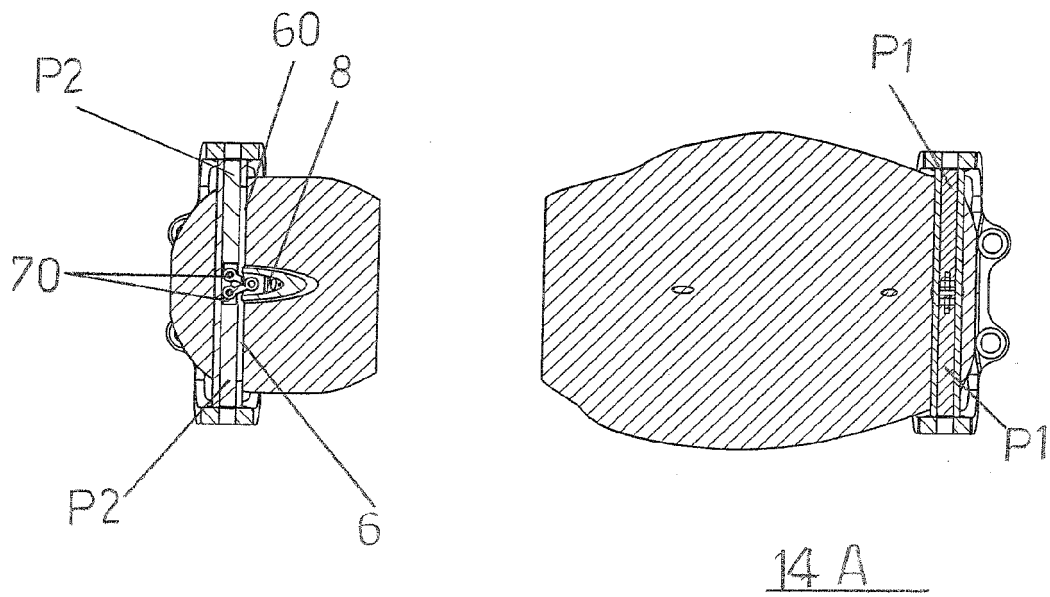
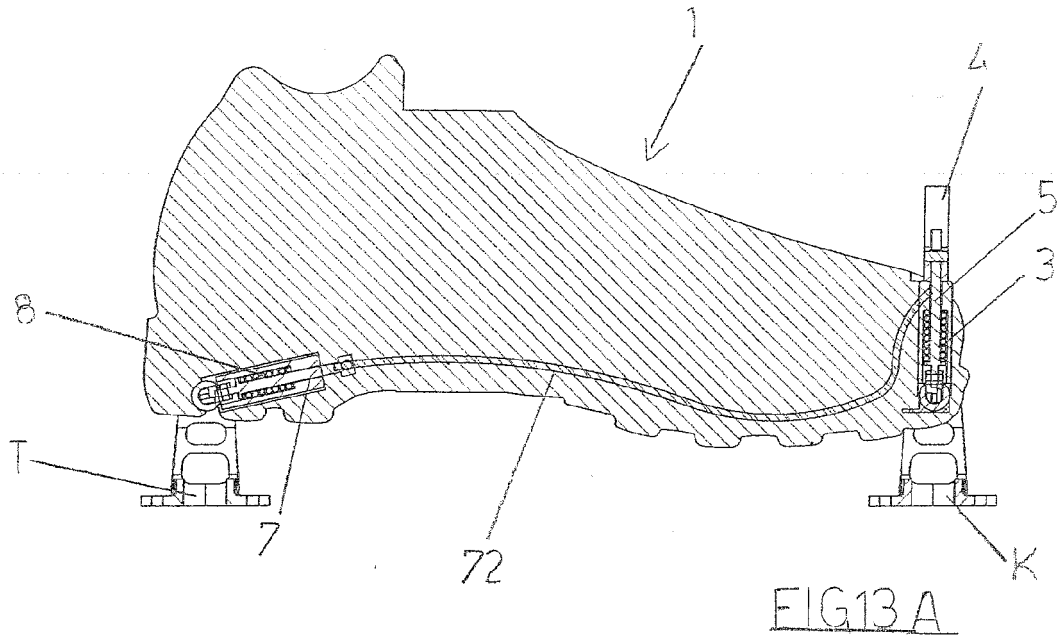
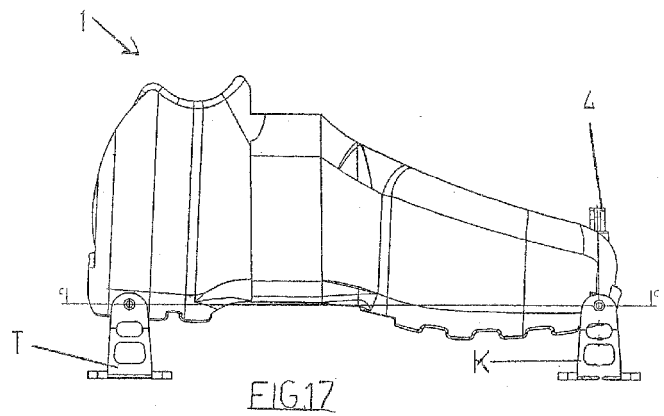
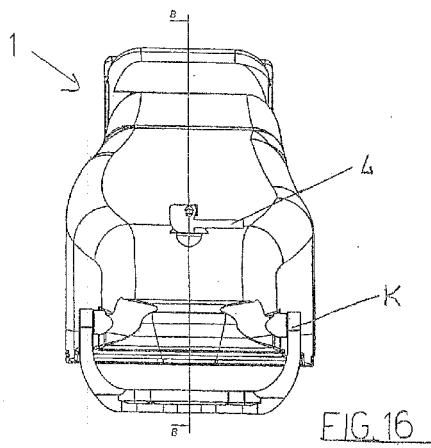
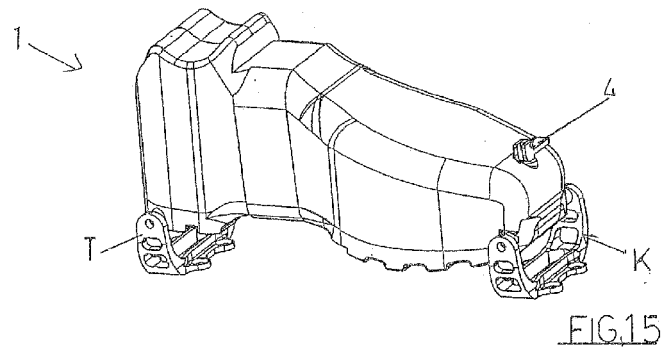
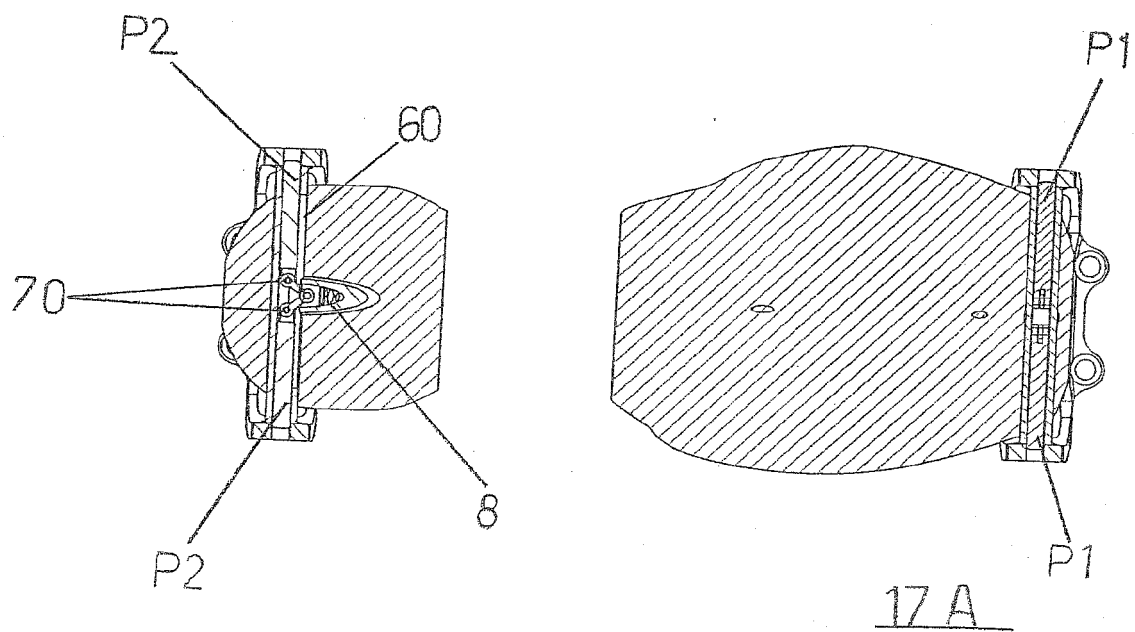
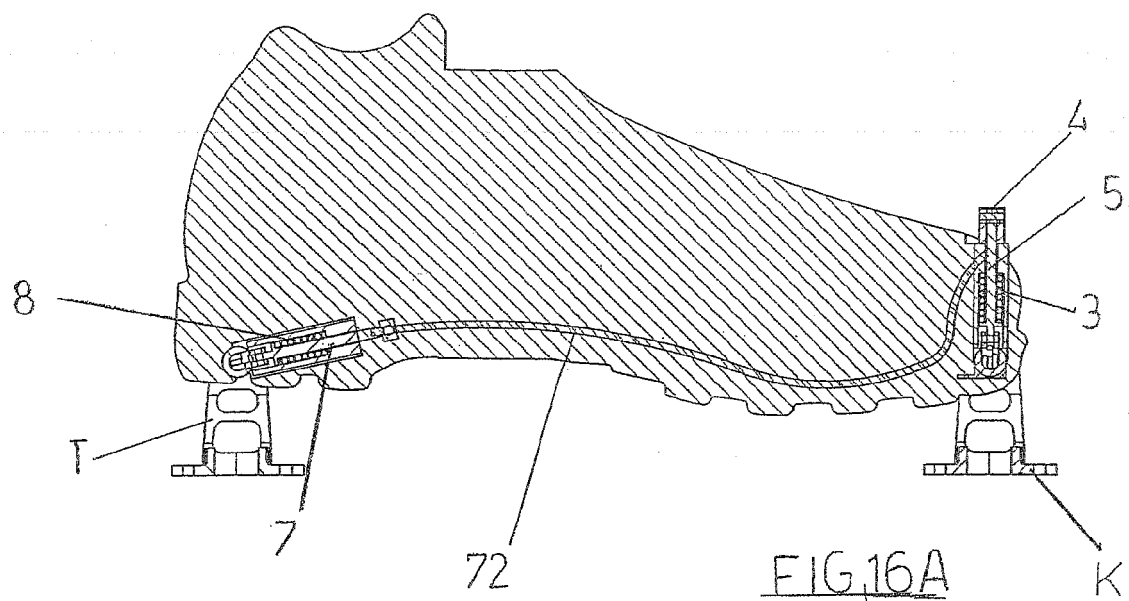
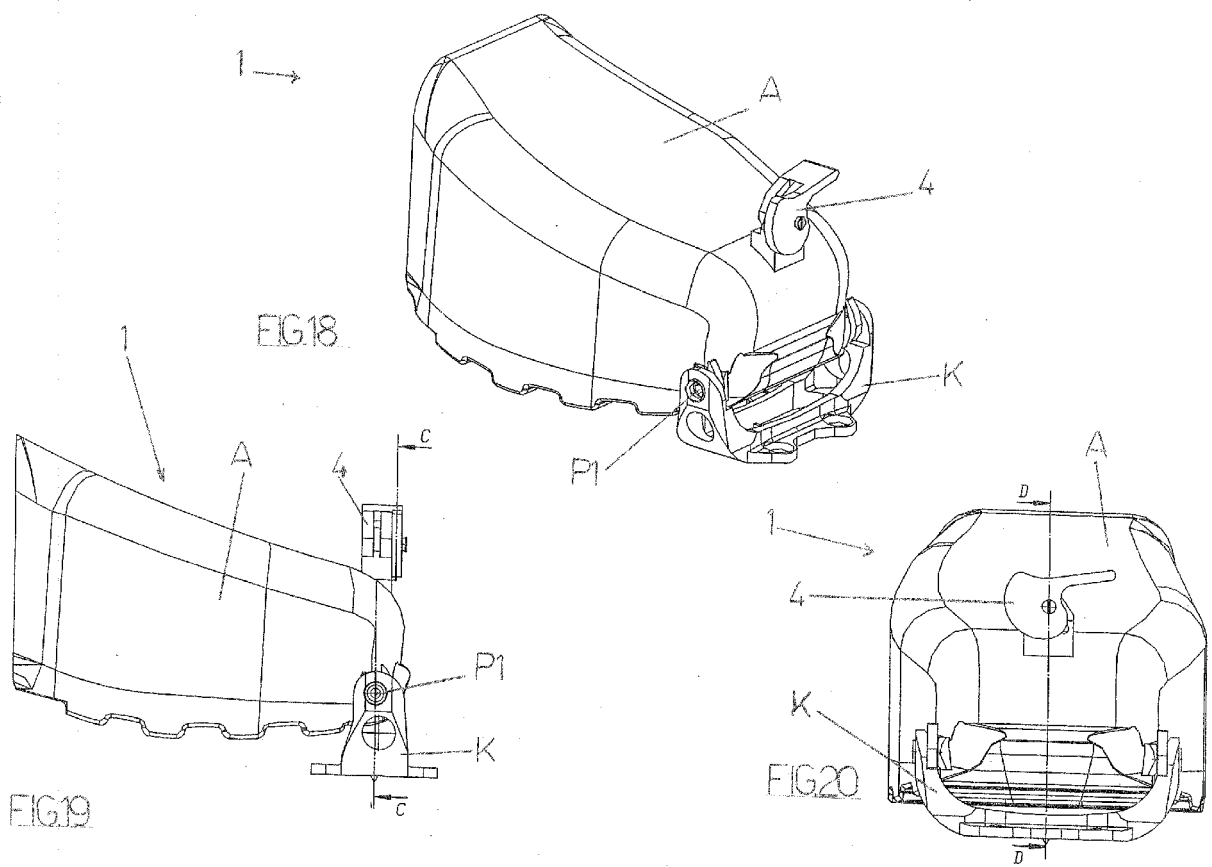


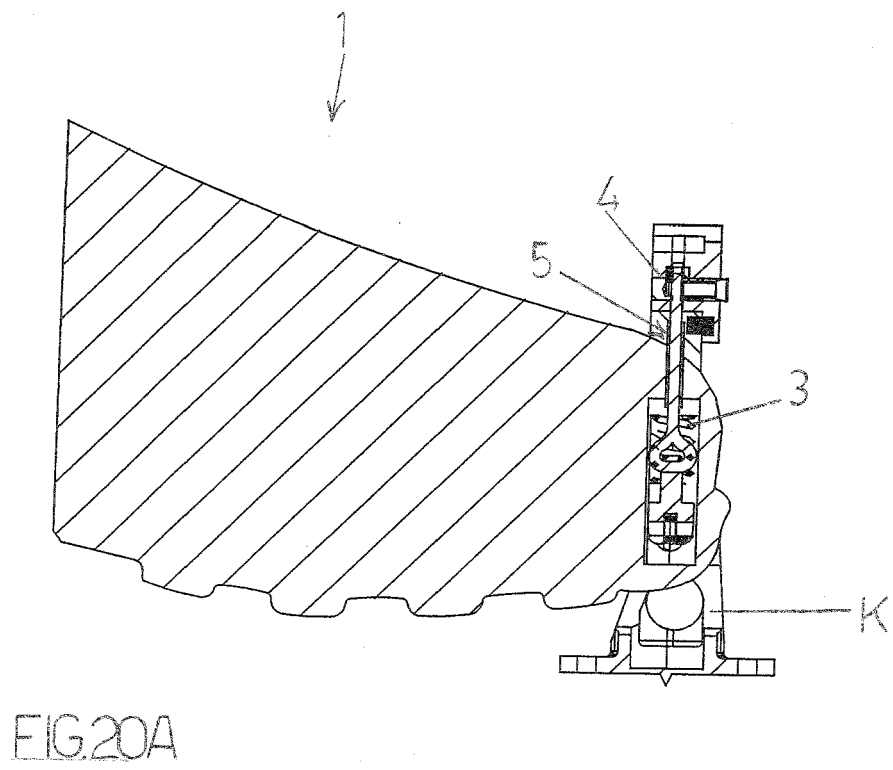
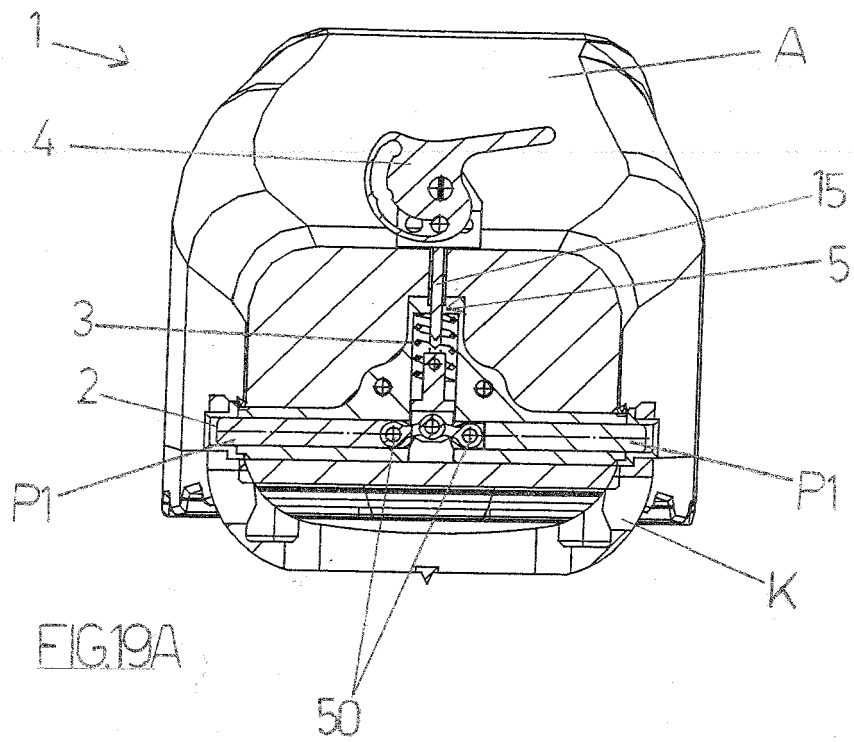
FIG. 14

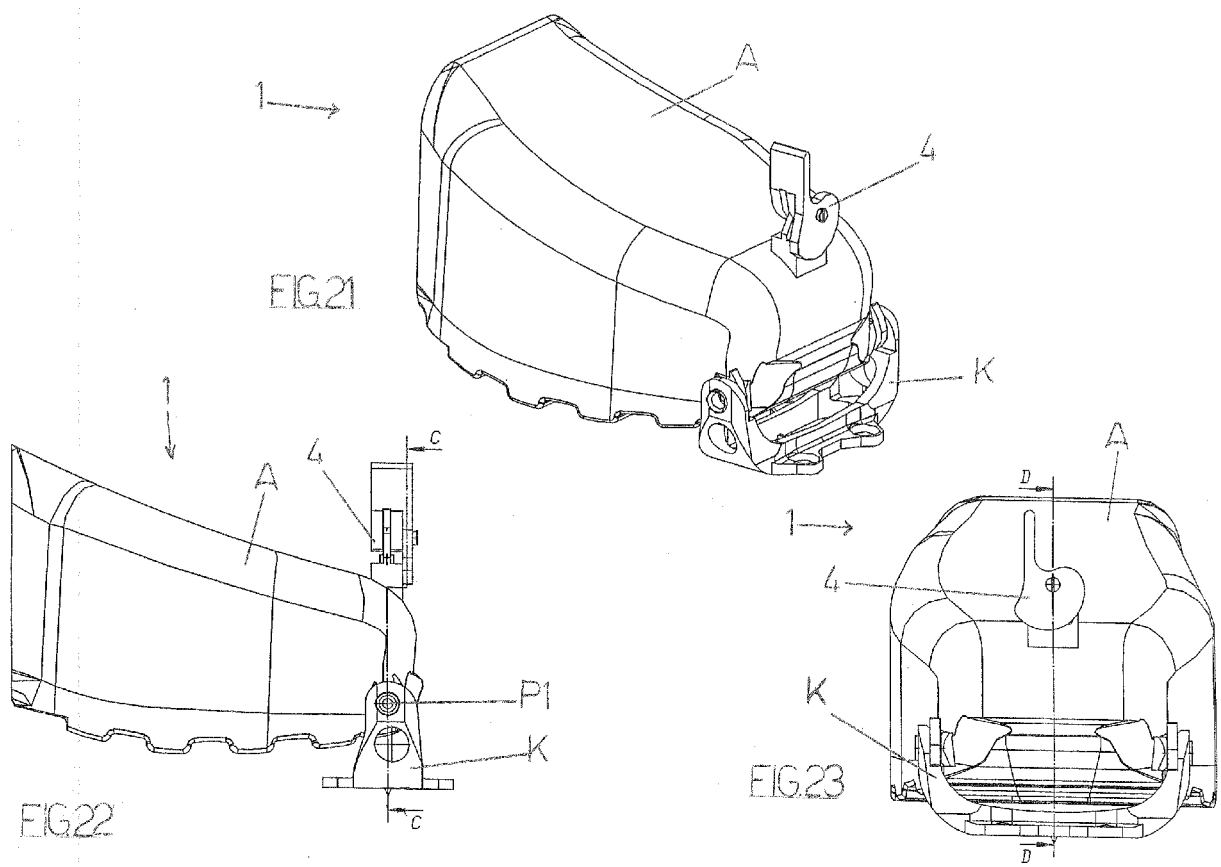


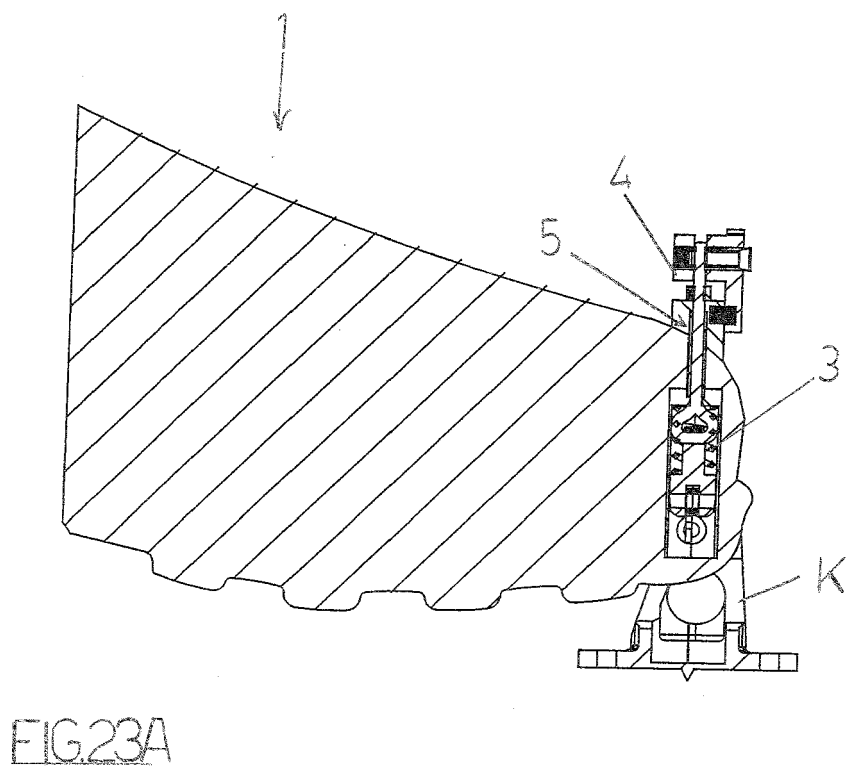
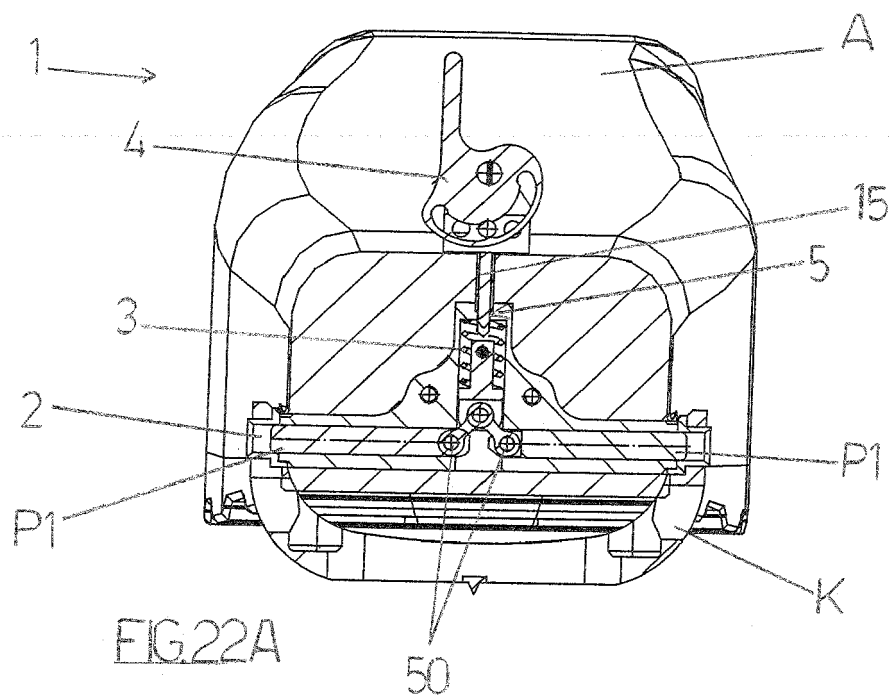


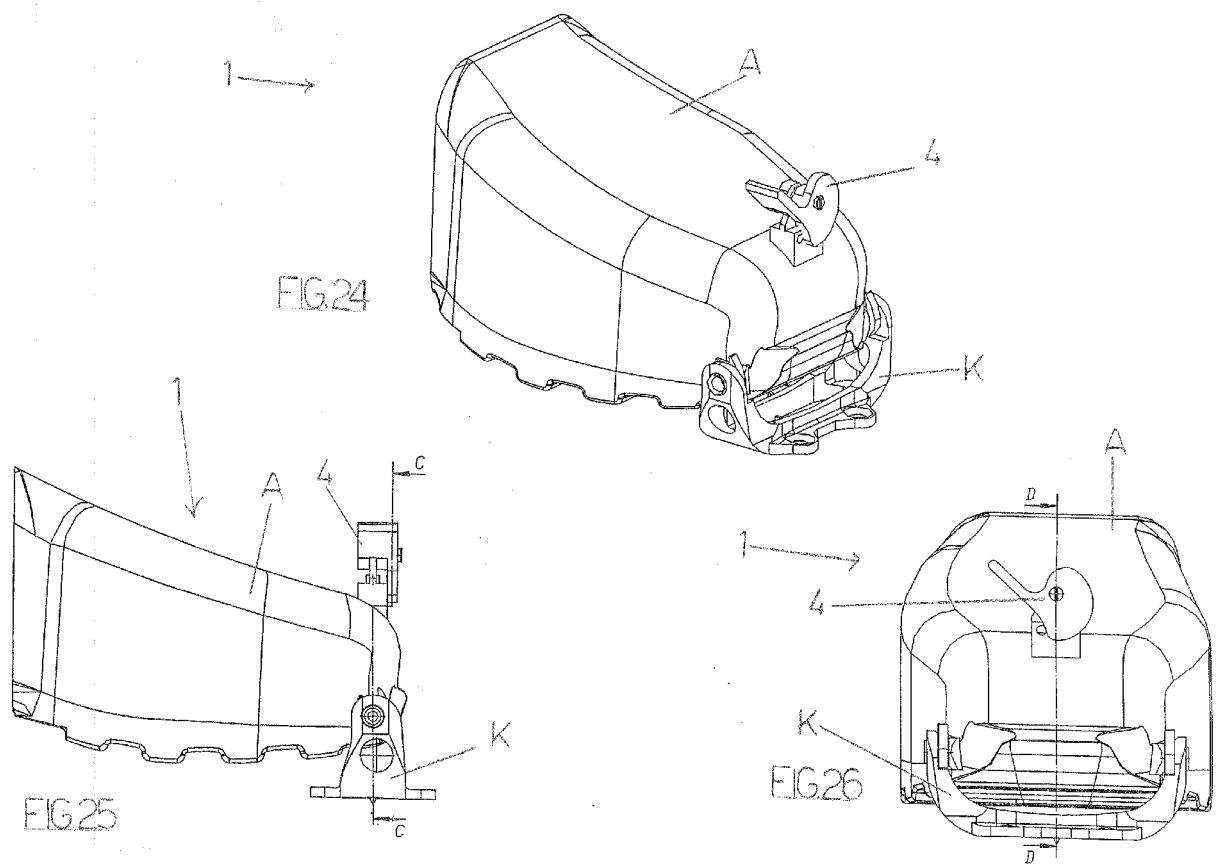


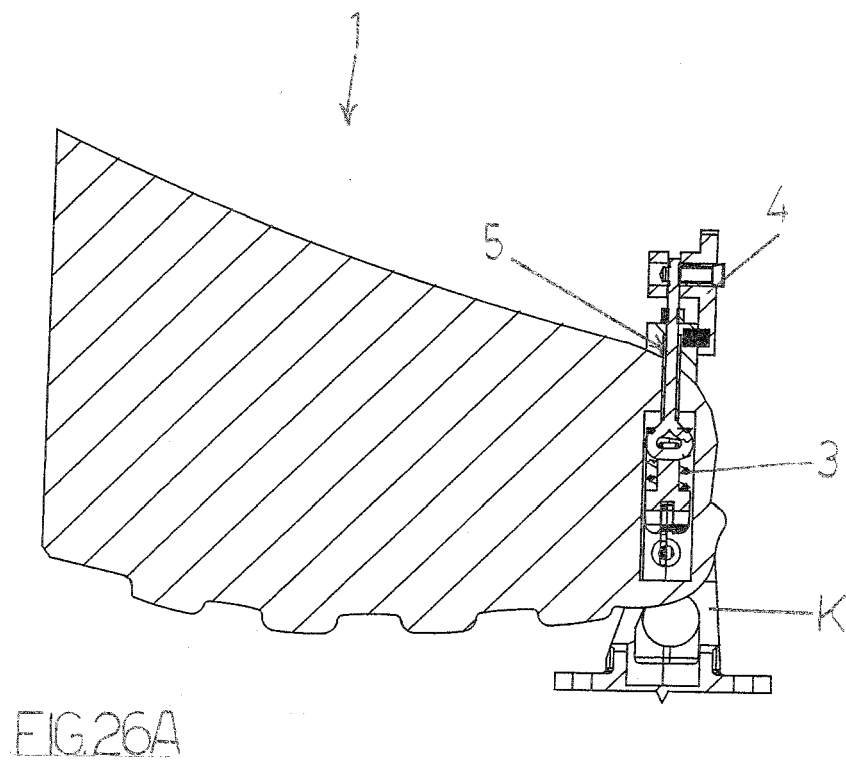
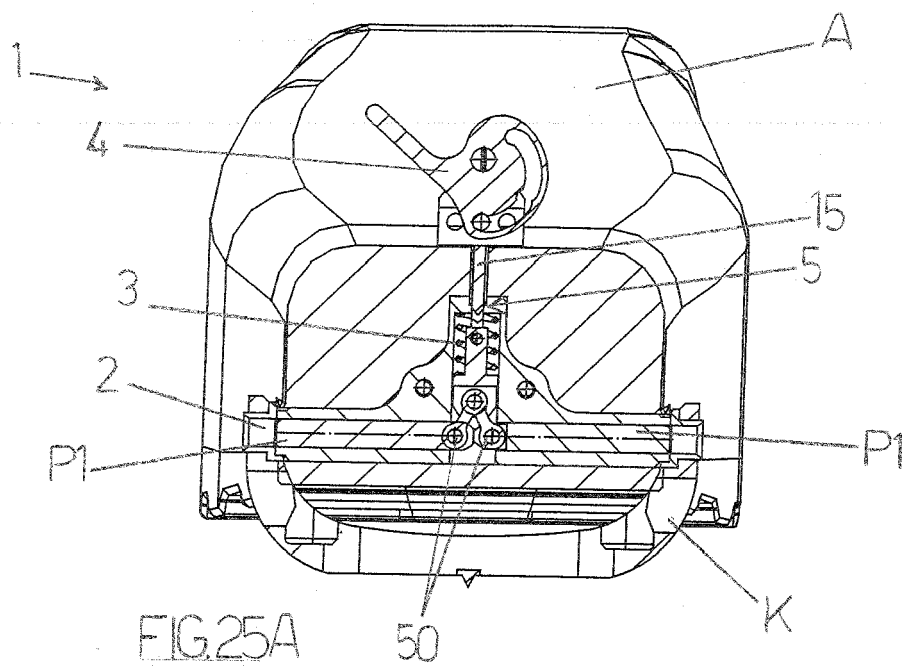














EUROPEAN SEARCH REPORT

 Application Number
 EP 16 16 7446

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The present search report has been drawn up for all claims			
Place of search Munich		Date of completion of the search 5 September 2016	Examiner Herry, Manuel
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			

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**ANNEX TO THE EUROPEAN SEARCH REPORT
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5 This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report.
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