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(54) **Sports boot, such as a ski boot or suchlike, and opening device for said sports boot**

(57) Sports boot (10) comprising a lower part (12), to contain a user's foot, and an upper part (13) pivoted on the lower part (12) to contain the ankle. The lower part (12) and the upper part (13) comprise a central opening (11) defined by respective edges (11a, 11b). A closing device (15) is disposed astride the central opening (11) and is attached on the two edges (11a, 11b) to determine the closing of the central opening (11). The boot (10) comprises an opening device (18, 118) provided with a

first element (16) attached to a first edge (11a) and comprising adjustable positioners (27, 127, 30, 130), to define one or more determinate reciprocal positions of the first element (16) and the first edge (11a), in which the first element (16) is maintained toward the central opening (11). The opening device (18, 118) is provided with a second element (17) attached to a second edge (11b) and comprising constraint means (26), in which the first element (16) is temporarily constrained, in the active condition of the positioners (27, 127, 30, 130).

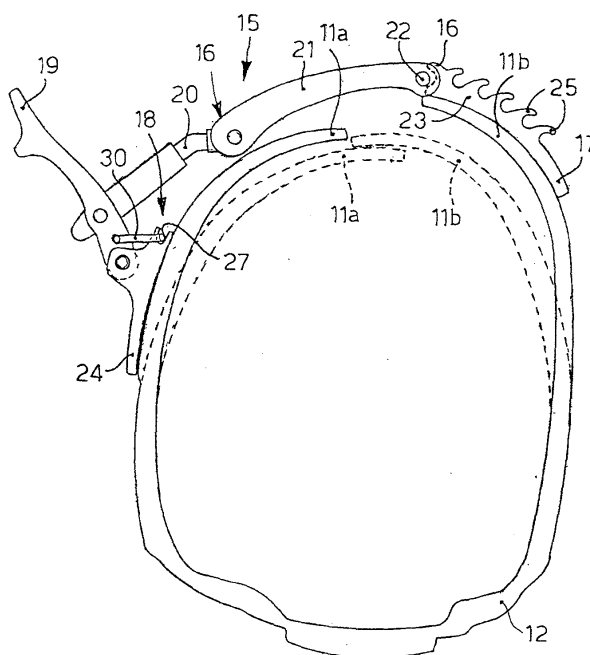


fig. 3

Description

FIELD OF THE INVENTION

[0001] The present invention concerns a sports boot, such as a ski boot or suchlike, conformed to define a plurality of selective closed conditions and at least a condition of controlled extra-opening, in order to optimize the conditions for putting on the sports boot for the wearer.

BACKGROUND OF THE INVENTION

[0002] Sports boots with a central opening entrance are known, such as ski boots, whether they are for alpine skiing, downhill, snowboard or other, which comprise a rigid outer casing and ankle section, the latter pivoted on the outer casing in correspondence with the malleolar part of the foot.

[0003] These known boots comprise a plurality of closing hooks attached to the outer casing and/or to the ankle section, in correspondence with the central opening, so as to allow the selective adjustment of the intensity of the closure of the outer casing and of the ankle section, around the foot and the tibial area of the user's leg.

[0004] The closing hooks generally comprise a lever-type tensioner attached on one side of the central opening, and a closing rack attached to the other side of the central opening, and in which the lever element can be selectively and adjustably associated so as to determine different degrees of closure of the boot.

[0005] It is also known that, in order to put on or take off the boot, the user, after having released the closing hooks, performs a manual operation to open out the edges of the outer casing and the ankle section which define the central opening, in order to widen the central opening and the inside volume of the outer casing and the ankle section, so as to allow a slight turning of the ankle and to prepare the foot anatomically for insertion or extraction.

[0006] This opening operation happens in a uncontrolled and unrepeatable way, however, inasmuch as it varies depending on the strength applied by the user, thus entailing, over time, a reduction in the elastic characteristics of the material, and also compromising the correct closing of the boot.

[0007] Moreover, the edges of the outer casing are normally overlapping in the metatarsal area of the foot and therefore cannot be opened wide by manual operations, as happens on the contrary for the tarsal and tibial areas.

[0008] Furthermore, the opening operation, which must of necessity be done with both hands, cannot always be done autonomously, for example by children, and in particular environmental conditions, for example in the presence of ice, it can be particularly difficult.

[0009] Purpose of the present invention is to make a sports boot which is simple and economical to make, and which allows a controlled and repeatable opening of all the parts of the outer casing and ankle section, without

limiting the functionality for a correct and secure closure.

[0010] The Applicant has devised, tested and embodied the present invention to overcome the shortcomings of the state of the art and to obtain these and other purposes and advantages.

SUMMARY OF THE INVENTION

[0011] The present invention is set forth and characterized in the independent claims, while the dependent claims describe other characteristics of the invention or variants to the main inventive idea.

[0012] In accordance with the above purpose, a sports boot according to the present invention comprises a lower part, or outer casing, able to contain the user's foot, and an upper part, or ankle section, pivoted on the outer casing and able to contain the ankle joint and possibly the tibial area of the user's leg.

[0013] Both the outer casing and the ankle section comprise a central opening defined laterally by respective edges of the outer casing and the ankle section. The edges can be selectively brought together by means of at least a closing device disposed astride the central opening and attached on opposite sides to the two edges of the outer casing and/or the ankle section, in order to determine at least the closing of the central opening, with a desired degree of closing force.

[0014] According to a characteristic feature of the present invention, the sports boot comprises at least an opening device with at least a first element attached to a first of the two edges, and a second element attached to the second of the two edges.

[0015] The first element comprises positioning means of the adjustable type and able to define one or more determinate reciprocal stable positions of the first element and the first edge, in which the first element is maintained in a stable way toward the central opening with respect to a normal resting position.

[0016] According to another characteristic feature, the second element comprises constraint means, in which the first element is able to be temporarily constrained, so that, when it is in one of the above stable positions defined by the positioning means, it determines a condition of controlled extra-opening of the outer casing and/or ankle section.

[0017] In this way, the combination of the constraint of the first and the second element, and the reciprocal positions of the first element and the first edge, determine a thrust by the first element against the second element.

[0018] The thrust has an effect on both edges, determining a controlled reciprocal distancing thereof, and defining the condition of controlled extra-opening of the boot.

[0019] With the present invention it is therefore possible to carry out a controlled opening of the edges of the outer casing and/or ankle section.

[0020] This opening, being controlled, happens in a repeatable, stable and adjustable way, and in a substan-

tially secure way as far as concerns the maintenance of the original elastic characteristics of the material which makes up the outer casing and ankle section.

[0021] Moreover, since the opening is carried out by means of the opening device, it can be actuated indiscriminately in any area of the outer casing and/or ankle section, without requiring excessive force from the user, and without needing to use both hands.

[0022] In this way, the operations of putting in or removing the foot can be carried out easily, completely autonomously and substantially in any environmental condition.

[0023] According to a variant, the first element and the second element of the opening device are integrated in the normal elements which make up the closing device of the sports boot, such as for example a lever-type hook and a coordinated adjustment rack.

[0024] According to this variant, with the same device with which the sports boot is typically closed, the controlled opening is also carried out in order to remove or insert the foot.

[0025] According to a variant, the positioning means of the first element comprise a U-shaped clasp and at least a coordinated coupling seating for the clasp. The reciprocal conformation of the at least one seating and of the clasp are such that, in their coupled condition, they maintain the first part in one of said reciprocal positions with the first edge.

[0026] In the solution in which the opening device and the closing device are integrated, the clasp and the seating are constrained to and made on the lever-type hook.

[0027] According to a variant, the positioning means comprise a latch-type element elastically constrained to the first element and a stop tooth mounted on the first edge.

[0028] The stop tooth is able to cooperate with the latch element so as to define said determinate reciprocal positions of the first element and the first edge.

[0029] According to another variant, the second element comprises a constraint tooth facing the opposite side with respect to the attachment teeth, and conformed so as to temporarily house inside it at least one leading end of the first element.

[0030] In the solution in which the opening device and the closing device are integrated with each other, the stop tooth is made on the head of the rack, normally provided with a plurality of attachment teeth with which the lever-type hook cooperates in order to define the desired degree of closing force.

BRIEF DESCRIPTION OF THE DRAWINGS

[0031] These and other characteristics of the present invention will become apparent from the following description of a preferential form of embodiment, given as a non-restrictive example with reference to the attached drawings wherein:

- fig. 1 shows schematically a sports boot according to the present invention;
- fig 2 shows an enlarged cross section of the sports boot in fig. 1, in a first operating condition;
- fig. 3 shows an enlarged cross section of the sports boot in fig. 1, in a second operating condition;
- fig. 4 shows an enlarged cross section of a variant of the sports boot in fig. 1, in a first operating condition;
- fig. 5 shows an enlarged cross section of the variant in fig. 4, in a second operating condition.

DETAILED DESCRIPTION OF A PREFERENTIAL FORM OF EMBODIMENT

[0032] With reference to the attached drawings, a sports boot according to the present invention is indicated generally by the number 10, in this case a ski boot, of the type substantially comprising a rigid lower part or outer casing 12, inside which a user's foot can be disposed, and an upper part, or ankle section 13, also rigid and able to contain the ankle joint and tibial part of the user's leg.

[0033] The ankle section 13 is pivoted to the outer casing 12 in correspondence with the malleolar part, and able to partially rotate with respect to the outer casing 12.

[0034] The outer casing 12 and the ankle section 13 centrally comprise a central opening 11 defined at the sides by two edges, respectively a first 11 a and a second 11 b.

[0035] The sports boot 10 also comprises three closing hooks 15 disposed astride the central opening 11, respectively, a first on the outer casing 12 in correspondence with the metatarsal zone of the foot, a second in correspondence with the instep, and a third on the ankle section 13, in correspondence with the tibial zone of the leg.

[0036] Each closing hook 15 comprises an anchorage lever 16 assembled on the first edge 11 a, and an adjustment rack 17 assembled on the second edge 11 b.

[0037] Both the anchorage lever 16 and the adjustment rack 17 are assembled on the respective edges 11 a and 11 b, in a substantially known way, for example by means of screws, rivets, pins or other.

[0038] The traditional closing and opening operations of the closing hooks 15 determine the reciprocal positioning of the edges 11 a and 11 b, so as to define, respectively, a plurality of closed conditions and an open condition of the boot 10, so as to allow the user to put on and take off the boot, as well as to use it correctly.

[0039] In this case, the anchorage lever 16 comprises a command element 19 hinged to the first edge 11 a through a hinging base 24, a central segment 20 constrained to the command element 19, and a terminal segment 21 constrained to the central segment 20 and provided with an attachment peg 22.

[0040] The adjustment rack 17 comprises a plate 23 attached to the second edge 11 b and on which a plurality of attachment teeth 25 are made.

[0041] Each attachment tooth 25 is oriented and conformed so as to allow the housing of the attachment peg 22 of the anchorage lever 16, and to cooperate with the latter so as to define defined closed positions of the boot 10.

[0042] In this case, a constraint tooth 26 is also made on the plate 23, oriented in the opposite direction to the closing teeth 25 and conformed so as to allow the temporary housing inside it of the attachment peg 22 of the anchorage lever 16.

[0043] According to the invention, the boot 10 also comprises a plurality of opening devices 18, in this case integrated with each of the closing hooks 15, and able to define a condition of controlled extra-opening of the boot 10.

[0044] In particular, each opening device 18 comprises a substantially U-shaped clasp 30, and a coupling seating 27 having a shape coordinated with the clasp 30, to allow the selective and stable positioning of the latter inside it.

[0045] The clasp 30 is pivoted to the command element 19, while the coupling seating 27 is made in correspondence with the hinging base 24 of the command element 19.

[0046] As can be seen by comparing figs. 2 and 3, the disposition of the clasp 30 inside the coupling seating 27 determines a condition of stable positioning of the command element 19, and consequently also of the central segment 20 and the terminal segment 21, toward the entrance opening 11. In other words, the positioning of the clasp 30 in the coupling seating 27 determines a determinate reciprocal position of the anchorage lever 16 and the first edge 11a.

[0047] In this condition, by constraining the attachment peg 22 to the constraint tooth 26 of the adjustment rack 17, a thrust is determined against the adjustment rack 17, entailing a controlled and stable opening of the edges 11a and 11b.

[0048] With particular reference to fig. 3 it should be noted how the constrained condition of the attachment peg 22 in the relative constraint tooth 26, together with the positioning of the clasp 30 in the coupling seating 27, brings the edges 11a and 11b to move away from each other, with respect to a normal open condition of the boot 10 (shown with a broken line).

[0049] According to a variant, two or more coupling seatings 27 can be provided, able to determine different positions of the attachment lever 16 with respect to the first edge 11a, so as to define an equal number of different open conditions of the boot 10.

[0050] The release of the thrust condition is determined by removing the clasp 30 from the relative coupling seating 27.

[0051] According to the variant shown in fig. 4, each opening device 118 is integrated with a relative closing hook 15 and comprises, on its edge 11a, a stop tooth 127 provided in this case with three stop grooves 129.

[0052] Moreover, on the terminal segment 21 of the anchorage lever 16 a latch-type element 130 is elastically

pivoted, provided with a constraint lip 131, able to selectively cooperate with each of the stop portions 129, so as to define three different positions of the attachment lever 16 with respect to the first edge 11a.

[0053] As in the solutions shown in figs. 1, 2 and 3, in the case of the variant in fig. 4 also, the three positions of the anchorage lever 16 defined by the cooperation between the constraint lip 131 and one or another of the stop grooves 129, determines a more or less intense thrust of the attachment peg 22 against the constraint tooth 26, thus determining a reciprocal opening of the edges 11a and 11b, and therefore an extra-opening of the boot 10.

[0054] In this case, the release of the thrust condition is determined by manual pressure on the latch-type element 130, so as to determine the exit of the constraint lip 131 from the relative stop groove 127.

[0055] The elasticity of the material that makes up the edges 11a and 11b determines the repositioning of the latter in the normal open condition of the boot 10.

[0056] It is clear that modifications and/or additions of parts may be made to the sports boot 10 as described heretofore, without departing from the field and scope of the present invention.

[0057] For example it comes within the field of the present invention to provide a pair of laces, or similar flexible gripping elements, constrained to the respective edges 11a and 11b of the upper part of the ankle section 13.

[0058] The laces are suitable to be pulled by the user, from opposite sides with respect to the opening 11, so as to further increase the opening of the ankle section 13, and therefore to further facilitate the operations of putting in and taking out the foot.

[0059] It also comes within the field of the present invention to provide that the opening devices 18, 118, are independent with respect to the closing hooks 15.

[0060] It is also clear that, although the present invention has been described with reference to specific examples, a person of skill in the art shall certainly be able to achieve many other equivalent forms of sports boot such as a ski boot or suchlike, having the characteristics as set forth in the claims and hence all coming within the field of protection defined thereby.

Claims

1. Sports boot comprising a lower part (12) able to contain a user's foot, and an upper part (13) pivoted on said lower part (12) and able to contain the ankle joint, both said lower part (12) and said upper part (13) comprising a central opening (11) defined laterally by respective edges (11a, 11b), and at least a closing device (15) disposed astride each of said central openings (11) and attached on opposite sides on said two edges (11a, 11b) to determine at least the closing of said central opening (11), with a de-

- sired degree of force, **characterized in that** it comprises at least an opening device (18, 118) provided with at least a first element (16) attached to a first of said two edges (11a) and comprising positioning means (27, 127, 30, 130) of adjustable type and able to define one or more determinate reciprocal and stable positions of said first element (16) and said first edge (11a), in which said first element (16) is able to be maintained stably toward said central opening (11), and with a second element (17) attached to a second of said two edges (11b) and comprising constraint means (26), in which said first element (16) is able to be temporarily constrained, in the active condition of said positioning means (27, 127, 30, 130), in order to maintain said first edge (11a) and said second edge (11b) in a condition of reciprocal distance and to define a condition of controlled extra-opening of said opening (11).
2. Boot as in claim 1, **characterized in that** said opening device (18, 118) and said closing device (15) are integrated with each other.
 3. Boot as in claim 2, **characterized in that** said first element comprises at least a lever element (16) pivoted to said first edge (11a) and provided with at least an attachment pin (22), able to be selectively brought in cooperation with said second element (17), so as to define the desired degree of closing force.
 4. Boot as in claim 2 or 3, **characterized in that** said second element comprises a rack (17) provided with a plurality of attachment teeth (25) with which said first element (16) is able to cooperate, so as to define the desired degree of closing force.
 5. Boot as in claim 4, **characterized in that** said constraint means comprise a constraint tooth (26) facing the opposite side with respect to said attachment teeth (25), and conformed so as to house temporarily inside it at least said attachment pin of said first element (16).
 6. Boot as in claim 1, **characterized in that** said positioning means comprise at least a clasp (30) pivoted to said first element, and at least a coordinated coupling seating (27) conformed so as to house said clasp (30) inside it, in order to define said determinate reciprocal positions of said first element (16) and said first edge (11a).
 7. Boot as in claim 1, **characterized in that** said positioning means comprise at least a latch-type element (130) elastically constrained to said first element and a stop tooth (127) mounted on the first edge (11a), and able to cooperate with said latch-type element (130) so as to define said determinate reciprocal positions of said first element (16) and said first edge (11a).
 8. Boot as in any claim hereinbefore, **characterized in that** it comprises at least a pair of flexible gripping elements, constrained to the respective edges (11a, 11b) of said upper part (13), and able to allow a manual traction to open said edges (11a, 11b).
 9. Opening device for a sports boot (10) comprising a lower part (12) able to contain the user's foot, and an upper part (13) pivoted on said lower part (12) and able to contain the ankle joint, both said lower part (12) and said upper part (13) comprising a central opening (11) defined laterally by respective edges (11a, 11b), and at least a closing device (15) disposed astride each of said central openings (11) and attached on opposite sides on said two edges (11a, 11b) to determine at least the closing of said central opening (11), with a desired degree of force, **characterized in that** it comprises at least a first element (16) attached to a first of said two edges (11a) and comprising positioning means (27, 127, 30, 130) of adjustable type and able to define one or more determinate reciprocal and stable positions of said first element (16) and said first edge (11a), in which said first element (16) is able to be maintained stably toward said central opening (11), and with a second element (17) attached to a second of said two edges (11b) and comprising constraint means (26), in which said first element (16) is able to be temporarily constrained, in the active condition of said positioning means (27, 127, 30, 130), in order to maintain said first edge (11a) and said second edge (11b) in a condition of reciprocal distance and to define a condition of controlled extra-opening of said opening (11).

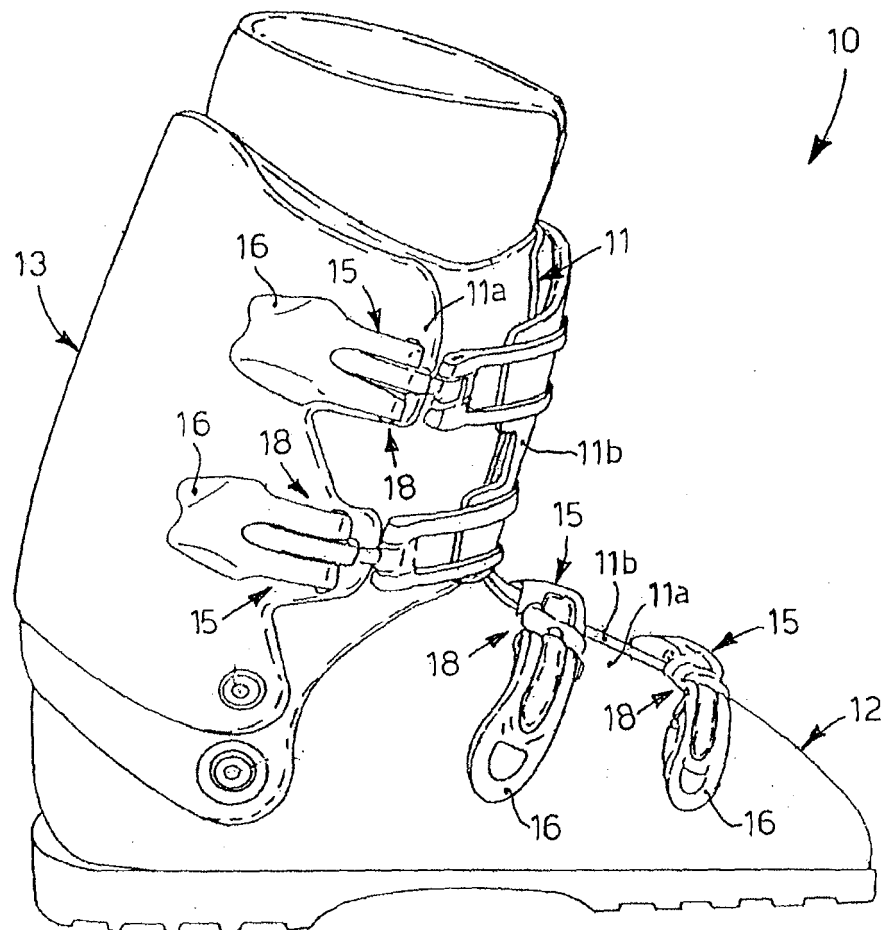


fig. 1

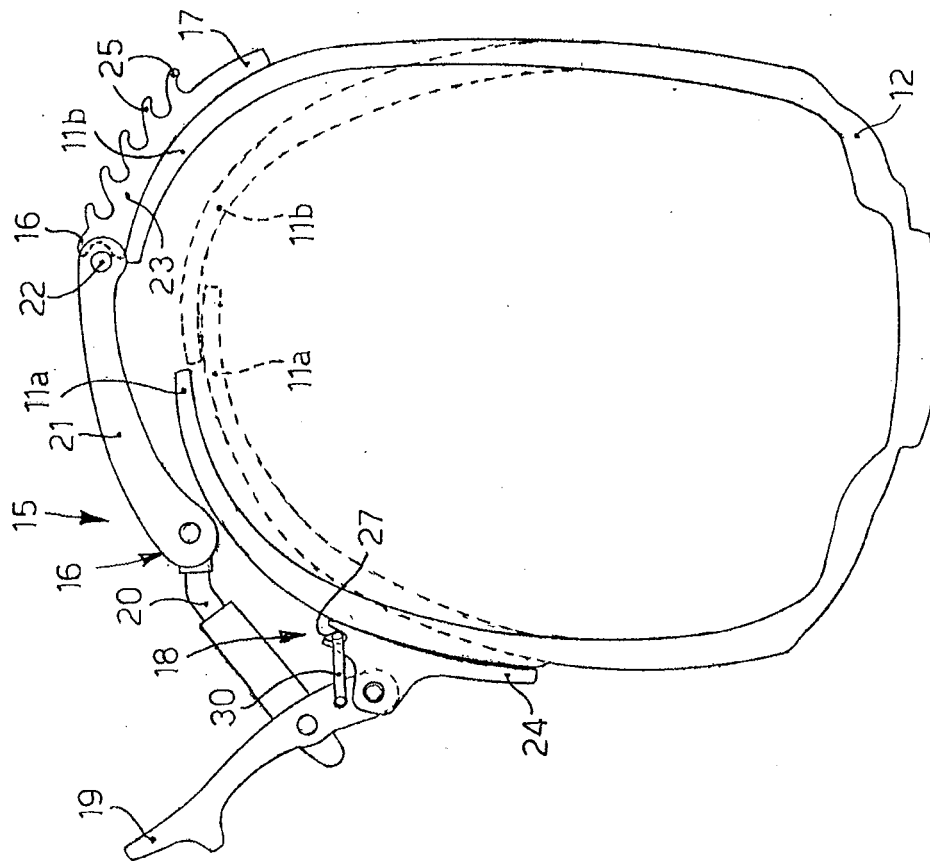


fig. 3

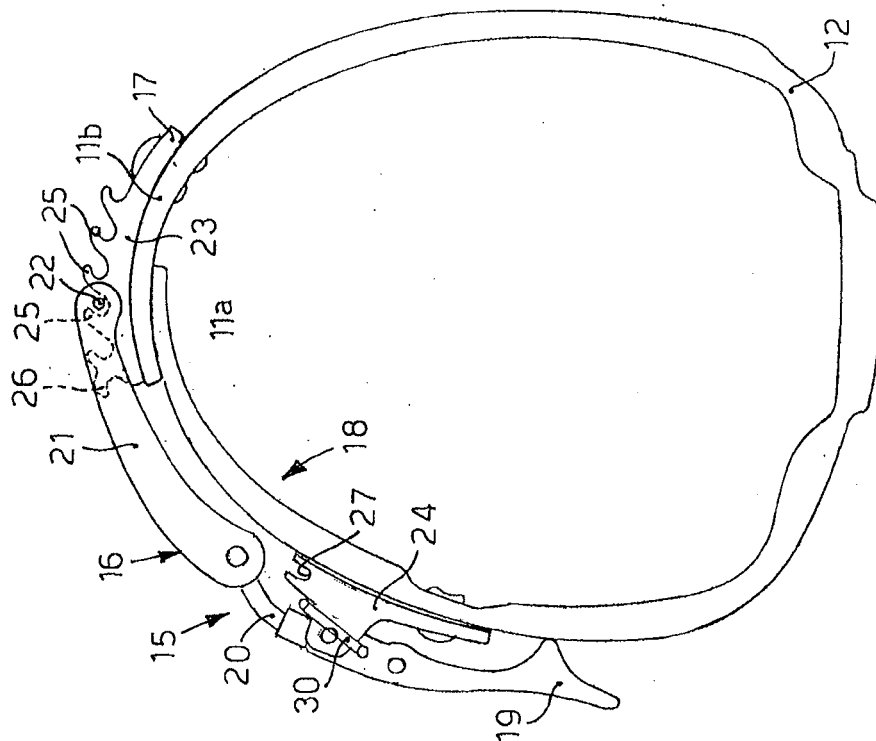


fig. 2

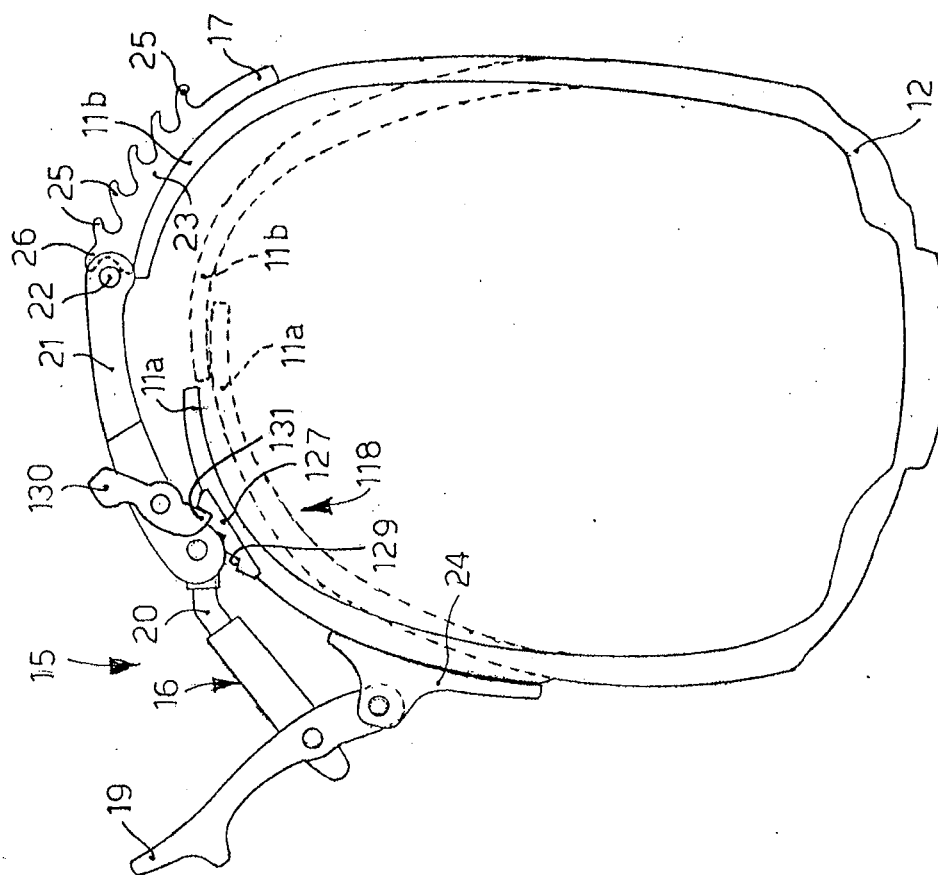


fig. 5

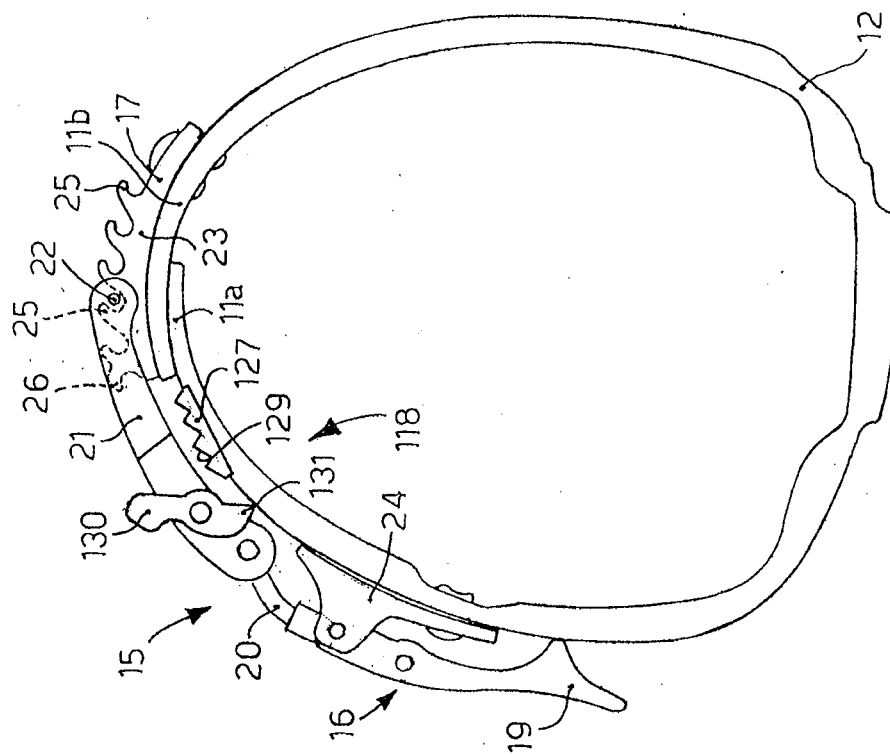


fig. 4



EUROPEAN SEARCH REPORT

Application Number
EP 09 18 0029

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
X	DE 31 32 042 A1 (NORDICA SPA [IT]) 13 May 1982 (1982-05-13) * the whole document *	1-4,8,9	INV. A43C11/14
A	DE 69 09 399 U (WEINMANN & CO K G [DE]) 24 July 1969 (1969-07-24) * the whole document *	1-9	
A	EP 1 470 762 A (LUIGI S A [LU]) 27 October 2004 (2004-10-27) * the whole document *	1-9	
			TECHNICAL FIELDS SEARCHED (IPC)
			A43C
The present search report has been drawn up for all claims			
Place of search		Date of completion of the search	Examiner
The Hague		19 April 2010	Cianci, Sabino
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
ON EUROPEAN PATENT APPLICATION NO.**

EP 09 18 0029

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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19-04-2010

Patent document cited in search report		Publication date	Patent family member(s)	Publication date
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DE 6909399	U	24-07-1969	NONE	
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