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(54) **SKI BOOT**

(57) A ski boot (12) comprising: a rigid foot portion (14) covering at least part of a foot area (18) of the boot (12), and a shoe (16) inserted at least partially in the foot portion (14). The shoe (16) protrudes from the foot portion (14) with a leg portion (20). The foot portion (14) comprises two side ears (22, 24) near a medial/rear area (26) of the same foot portion (14) partially covering the leg portion (20) of the shoe (16). The boot (12) is provided with retention means (28) suitable to assume at least two configurations:

- a first configuration in which they are suitable to limit and/or block the relative movement of the leg portion (20) of the shoe (16) between the two side ears (22, 24), or
- a second configuration wherein they are suitable to allow the relative movement of the leg portion (20) of the shoe (16) between the side ears (22, 24).

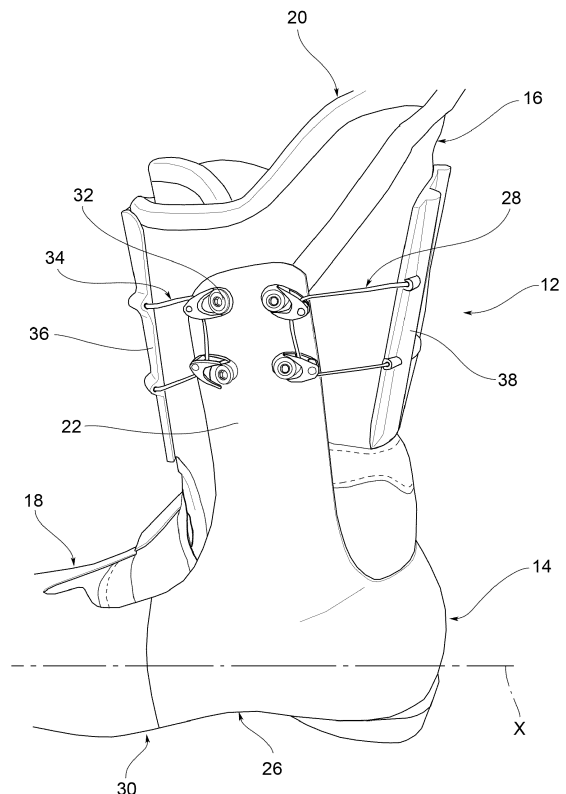


FIG.1

Description

[0001] The present invention concerns a ski boot, in particular a ski mountaineering boot.

STATE OF THE ART

[0002] As is well known, one of the main problems faced by ski mountaineering boots concerns the stage in which the heel of the boot is released from the ski, or the stage of walking that the skier must face once the ski is released from the ski mountaineering boot.

[0003] In particular, this problem is known as heel-toe transition, i.e. it concerns the rigidity of the boot that prevents the articulation between foot and leg at the ankle.

[0004] In this document we will refer to:

- a coupled boot to indicate a boot completely coupled to the relevant ski;
- a released boot, to indicate a boot that is coupled to its ski only by the front part; and
- a detached boot, to indicate a boot completely detached from the ski.

[0005] In addition, the expression 'rear area of the boot' means the area near the user's heel. Whereas the expression 'front area of the boot' means the part of the boot where the user's toes are located during use.

[0006] Again, in this document we will refer to the side area of the boot, to indicate one or both surfaces of the boot that extend between the rear area and the front area of the same boot.

[0007] The boots of the prior art comprise a rigid external structure arranged to cover almost all of an internal shoe.

[0008] The rigid external structure essentially comprises a foot portion and a leg portion hinged together, so as to allow a minimum articulation between the two parts, necessary for the actual articulation between foot and leg, at the ankle, when walking.

[0009] The foot portion is the part of the structure that covers the foot, on which the devices intended for coupling with the ski are arranged. The foot portion extends to the ankle area of the boot, where the hinge means that connect the boot with the leg portion are located.

[0010] In particular, the hinge means comprise a right hinge and a left hinge placed at the side portions of the boot in the ankle area.

[0011] The leg portion is a substantially cylindrical element extending from the foot portion to about two-thirds of the user's calf.

[0012] As mentioned above, the prior art has attempted to improve the so-called heel-toe transition, proposing hinge mechanisms suitable to ensure a wider range of movement between the foot portion and the leg portion.

[0013] In other solutions, the leg portion is provided with mechanisms that allow it to partially open and allow a minimum movement to the leg.

[0014] The ski mountaineering boots of the prior art, although widely used and appreciated, are not without drawbacks.

[0015] First, they do not guarantee a sufficient toe-heel transition to make the walking stage, or the stage with the boot released, comfortable and safe.

[0016] Moreover, the ski mountaineering boots according to the prior art, although provided with lightening areas and reduced thicknesses, are still heavy during the walking stage.

PRESENTATION OF THE INVENTION

[0017] The need is therefore felt to resolve at least partially the drawbacks and limitations cited with reference to the prior art.

[0018] Therefore, there is a need to provide a ski mountaineering boot that allows a walking stage and a more comfortable stage with the ski released, but still safe for the joints of the ankles of the user.

[0019] Moreover, there is a need for a ski mountaineering boot that is lighter, with an equal or greater level of safety relative to the ski mountaineering boots of the prior art.

[0020] These requirements are satisfied by a ski mountaineering boot according to claim 1.

DESCRIPTION OF THE DRAWINGS

[0021] Further features and advantages of the present invention will become clearer from the following description of the preferred and non-limiting examples of embodiment thereof, wherein:

- Figure 1 shows schematically a side view of a possible embodiment of a ski mountaineering boot according to the present invention;
- Figure 2 shows schematically a side view of a portion of a ski mountaineering boot according to an embodiment of the present invention;
- Figure 3 shows schematically a rear view of a portion of a ski mountaineering boot according to an embodiment of the present invention;
- Figure 4 shows schematically a front view of a portion of a ski mountaineering boot according to an embodiment of the present invention;
- Figure 5 shows schematically a side view of a ski mountaineering boot according to an embodiment of the present invention;
- Figure 6 shows schematically a side view of a ski mountaineering boot according to an alternative embodiment of the present invention; and
- Figure 7 shows schematically a side view of a ski mountaineering boot according to a further alternative embodiment of the present invention.

[0022] The elements or parts of elements in common between the embodiments described hereinafter will be

indicated at the same numerical references.

DETAILED DESCRIPTION

[0023] In Figure 1 a ski boot according to the present invention is indicated at the reference number 12.

[0024] The ski boot 12 comprises a rigid foot portion 14 covering at least part of a foot area 18 of the boot 12, and a shoe 16 adapted to be inserted at least partially in the foot portion 14.

[0025] In accordance with a possible embodiment of the present invention, the foot portion 14 may be made of rigid material such as a polymeric material, carbon fiber, etc. The shoe 16 may be made of technical fabric, for example. Advantageously, the shoe 16 may be waterproof and may comprise a breathable membrane suitable to prevent the communication of liquid through the shoe portion provided with this breathable membrane.

[0026] In particular, the shoe 16 protrudes from the foot portion 14 with a leg portion 20.

[0027] The foot portion 14 comprises two side ears 22, 24 near a medial/rear area 26 of the same foot portion 14 partially covering the leg portion 20 of the shoe 16.

[0028] Moreover, the boot 12 is provided with retention means 28 suitable to assume at least two configurations:

- a first configuration wherein they are suitable to limit and/or block the relative movement of the leg portion 20 of the shoe 16 between the two side ears 22, 24, and
- a second configuration wherein they are suitable to allow the relative movement of the leg portion 20 of the shoe 16 between the side ears 22, 24.

[0029] According to a possible embodiment of the present invention, the side ears 22, 24 extend from the foot portion 14 in a direction substantially perpendicular to a sole portion 30, upwards, i.e. in the opposite direction relative to the sole portion 30. In Figures 2 and 3, wherein the foot portion 14 is represented, an example of side ears 22, 24 is shown.

[0030] The sole portion 30 of the foot portion 14 comprises the means of connection with the ski. These connection means will not be explored further since as such, they are not specific subjects of the present invention.

[0031] According to a possible embodiment of the present invention, the side ears 22, 24 extend from the foot portion 14, so that the height from the plane of the sole is between 75% and 105% of the length of the foot portion 14. Advantageously, the side ears 22, 24 extend from the foot portion 14, so that the height from the sole plane is about 90% of the length of the foot portion 14.

[0032] The width at the quarter of the side ear 22, 24, distal relative to the sole plane, may be between 2% and 25% of the length of the foot portion 14.

[0033] The side ears 22, 24, at the quarter of the side ear 22, 24 distal with respect to the sole plane, may have a thickness between 0.5 mm and 30 mm.

[0034] With particular reference to Figure 3, it is noted that the side ears 22, 24 may have a position substantially parallel to a longitudinal axis x of the boot 12. Advantageously, the side ears 22, 24 may be substantially parallel to each other, at the quarter of the lateral ear 22, 24 distal relative to the sole plane.

[0035] According to a possible embodiment of the present invention, the placement of said side ears 22, 24 may be concave towards the inside of the boot 12.

[0036] In alternative embodiments, the position of the side ears 22, 24 may be convex towards the inside of the boot 12 or straight.

[0037] According to a possible embodiment of the present invention, the side ears 22, 24 in one portion distal from the foot portion 14 comprise coupling means 32 suitable to maintain the position of the retention means 28 along the side ears 22, 24 at least in the position wherein they are suitable to limit and/or block the relative movement of the leg portion 20 between the two side ears 22, 24.

[0038] According to a possible embodiment of the present invention, the coupling means 32 may be, for example, eyelets, slots, pins, etc.

[0039] In particular, as shown in the embodiment shown in Figure 5, the coupling means 32 may comprise fairleads 322, 324.

[0040] In accordance with an alternative embodiment shown in Figure 6, the coupling means 32 may be a cam cleat, e.g. with upper cable outlet.

[0041] Still, in another alternative embodiment, shown in the example in Figure 7, the coupling means 32 may comprise for example a buckle 326 fixed relative to one of the side ears 22, 24.

[0042] In accordance with a possible embodiment of the present invention, the retention means 28 may comprise, for example, a device with hooking cables 34 (shown in the example in Figure 1), a band with a ratchet, or laces suitable to be tied.

[0043] In a possible embodiment, shown in the example in Figure 7, the retention means 28 may comprise a Velcro® 282 band.

[0044] According to alternative embodiments, the retention means 28 may comprise throttle systems such as cam cleats (as shown for example in Figure 6), cams, boa type systems.

[0045] In use, the retention means 28 may act to tighten the side ears 22, 24 and thus the leg portion 30 of the shoe 16.

[0046] In particular, the retention means 28 may act to block the movement of the leg on the anatomical sagittal plane.

[0047] In accordance with a possible embodiment of the present invention, as shown in Figure 5, the shoe 16 comprises at least a rigid shield 36, 38 that in use is in direct or indirect contact with the retention means 28. At least one rigid shield 36, 38 is suitable to distribute the pressure of the retention means 28 over a larger area than that of the retention means 28.

[0048] In this way it is advantageously possible to discharge the pressure exerted over a wider area, improving the locking and improving the comfort of the user.

[0049] In accordance with a possible embodiment of the present invention, the at least one rigid shield 36, 38 is provided at a front portion of the leg portion 20 and/or at a rear portion of said leg portion 20.

[0050] Advantageously, these rigid shields may be fixed to said shoe in a removable way, for example by means of Velcro® or similar connections.

[0051] In a possible alternative embodiment, the rigid shields 36, 38 may be integrated into the shoe 16. For example, the rigid shields 36, 38 may be provided between an inner lining and an outer lining of the shoe 16.

[0052] In accordance with a possible alternative embodiment, said rigid shields 36, 38 are integrated with the retention means 28.

[0053] The advantages that may be achieved with the ski boot according to the present invention are thus now evident.

[0054] First, the boot according to the present invention is very light with respect to the boots of the prior art, as the leg portion is completely eliminated. This component, commonly made of rigid polymeric material or similar material, is completely replaced by two side ears and retention means.

[0055] This replacement, in addition to eliminating the leg portion, also involves the elimination of the hinges thereof, further simplifying the structure and further reducing the overall weight.

[0056] Furthermore, in addition to the advantages just mentioned, the ski boot according to the present invention allows the walking stage and the stage in which the boot is released from the ski to be notably improved. It is in effect clear that the leg is completely free to move as the shoe may move freely between the two lateral ears.

[0057] To the embodiments described above, the person skilled in the art may, in order to satisfy specific needs, make changes to or replacements of the described elements with equivalent elements without thereby departing from the scope of the accompanying claims.

[0058] For example, the principles of the present invention may also be applied to a boot intended for an activity other than ski mountaineering, such as downhill skiing, snowboarding, etc.

Claims

1. Ski boot (12) comprising: a rigid foot portion (14) covering at least part of a foot area (18) of the boot (12), and a shoe (16) inserted at least partially in said foot portion (14), said shoe (16) protruding from said foot portion (14) with a leg portion (20);
characterized in that
said foot portion (14) comprises two side ears (22, 24) near a medial/rear area (26) of the same foot

portion (14) partially covering the leg portion (20) of said shoe (16),
said boot (12) being provided with retention means (28) suitable to assume at least two configurations:

- a first configuration wherein they are suitable to limit and/or block the relative movement of said leg portion (20) of said shoe (16) between the two side ears (22, 24), or
- a second configuration in which they are suitable to allow the relative movement of said leg portion (20) of said shoe (16) between the side ears (22, 24).

2. Ski boot (12) according to the preceding claim, **characterized in that** said foot portion comprises a sole portion (30), said side ears (22, 24) extending from said foot portion (14) upwards in a direction substantially perpendicular to the sole portion (30).
3. Ski boot (12) according to any one of the preceding claims, **characterized in that** said side ears (22, 24) extend from said foot portion (14) so that the height from the sole plane is between 75% and 105% of the length of the foot portion (14).
4. Ski boot (12) according to any one of the preceding claims, **characterized in that** the width of said side ears (22, 24) at the quarter thereof distal to the sole plane may be between 2% and 25% of the length of the foot portion (14).
5. Ski boot (12) according to any one of the preceding claims, **characterized in that** said side ears (22, 24) have a thickness between 0.5 mm and 30 mm at the quarter of the side ear (22, 24) distal from the sole plane.
6. Ski boot according to any one of the preceding claims, **characterized in that** said side ears (22, 24) belong to planes substantially parallel to the sagittal anatomical plane, extending in a substantially vertical direction, thus being perpendicular to the sole plane.
7. Ski boot according to any one of the preceding claims, **characterized in that** said side ears (22, 24) in a distal portion thereof from said foot portion (14) comprise coupling means (32) suitable to maintain the position of said retention means (28) along said side ears (22, 24) at least in the position wherein they are suitable to limit and/or block the relative movement of said leg portion (20) between the two side ears (22, 24).
8. Ski boot (12) according to any one of the preceding claims, **characterized in that** said retention means (28) are chosen from the group comprising: a band

with Velcro®, a device with hooking cables (34), a band with ratchet, laces suitable to be tied.

9. Ski boot (12) according to any one of the preceding claims, **characterized in that** said shoe (16) comprises at least one rigid shield (36, 38) which in use is in direct or indirect contact with said retention means (28), said at least one rigid shield (36, 38) being suitable to distribute the pressure of said retention means (28) over a larger surface than that of the retention means (28). 5 10
10. Ski boot (12) according to the preceding claim, **characterized in that** said at least one rigid shield (36, 38) is arranged at a front portion of said leg portion (20) and/or at a rear portion of said leg portion (20). 15
11. Ski boot (12) according to any one of the preceding claims, **characterized in that** it is a ski mountaineering boot. 20

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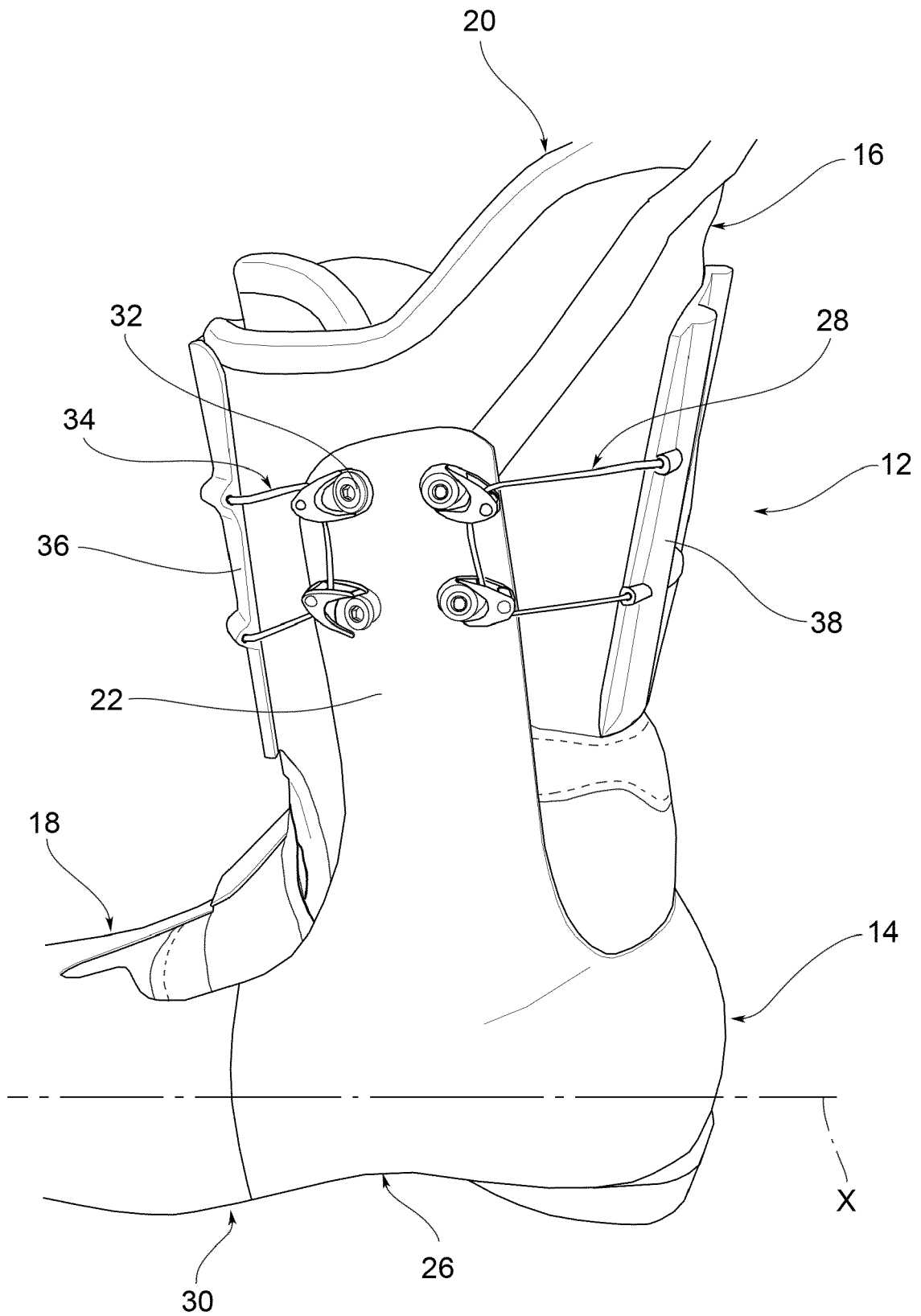


FIG.1

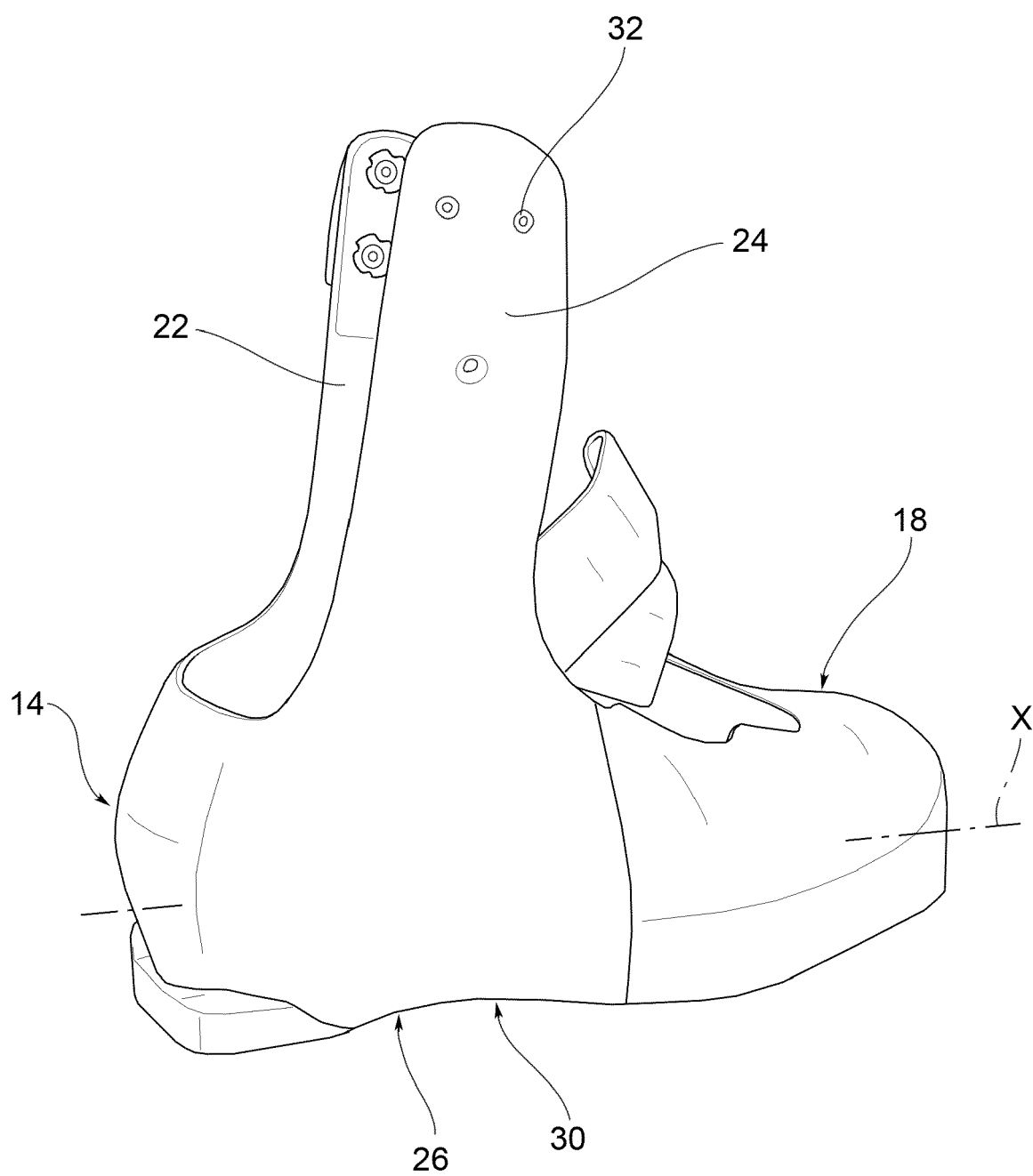


FIG.2

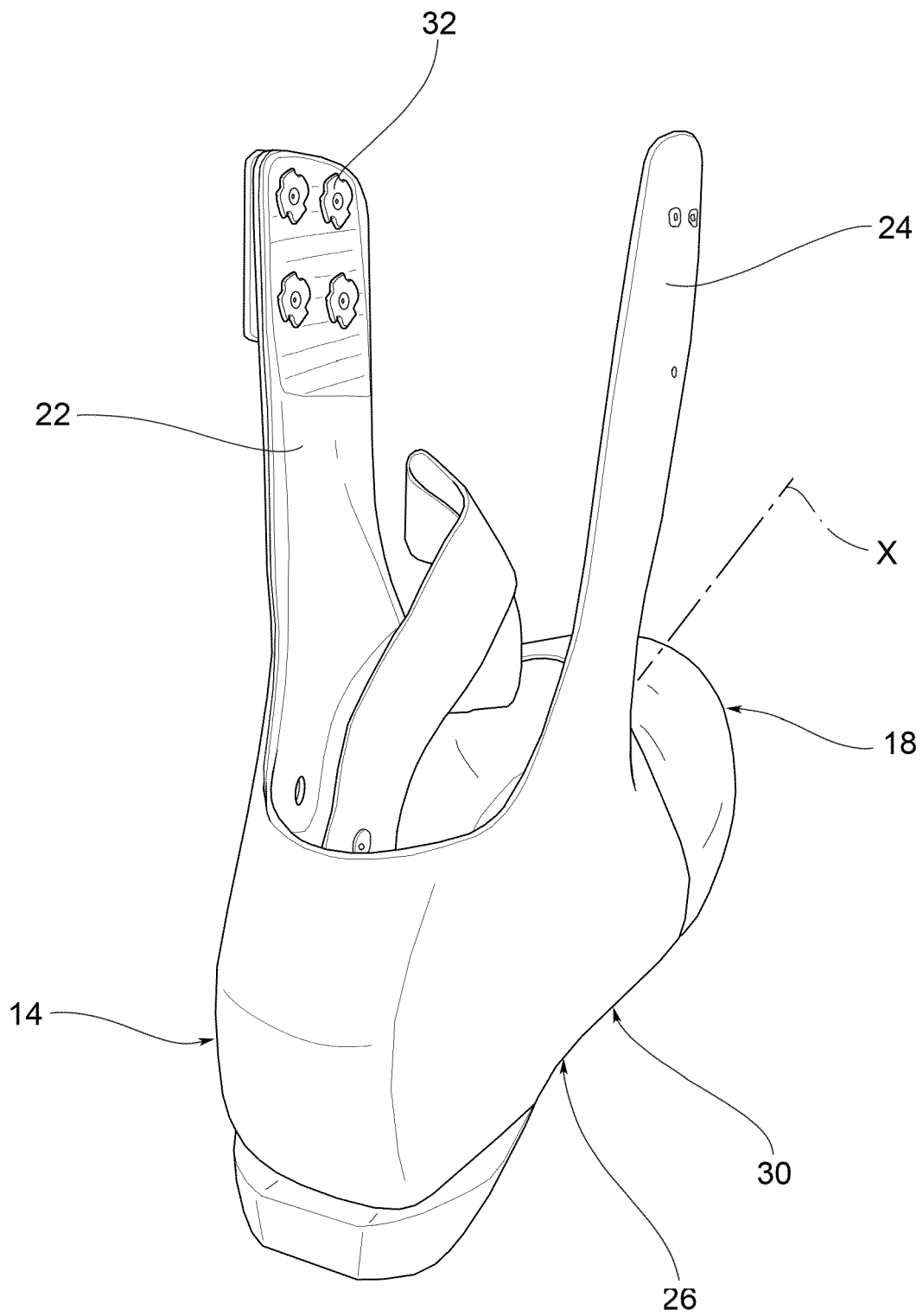


FIG.3

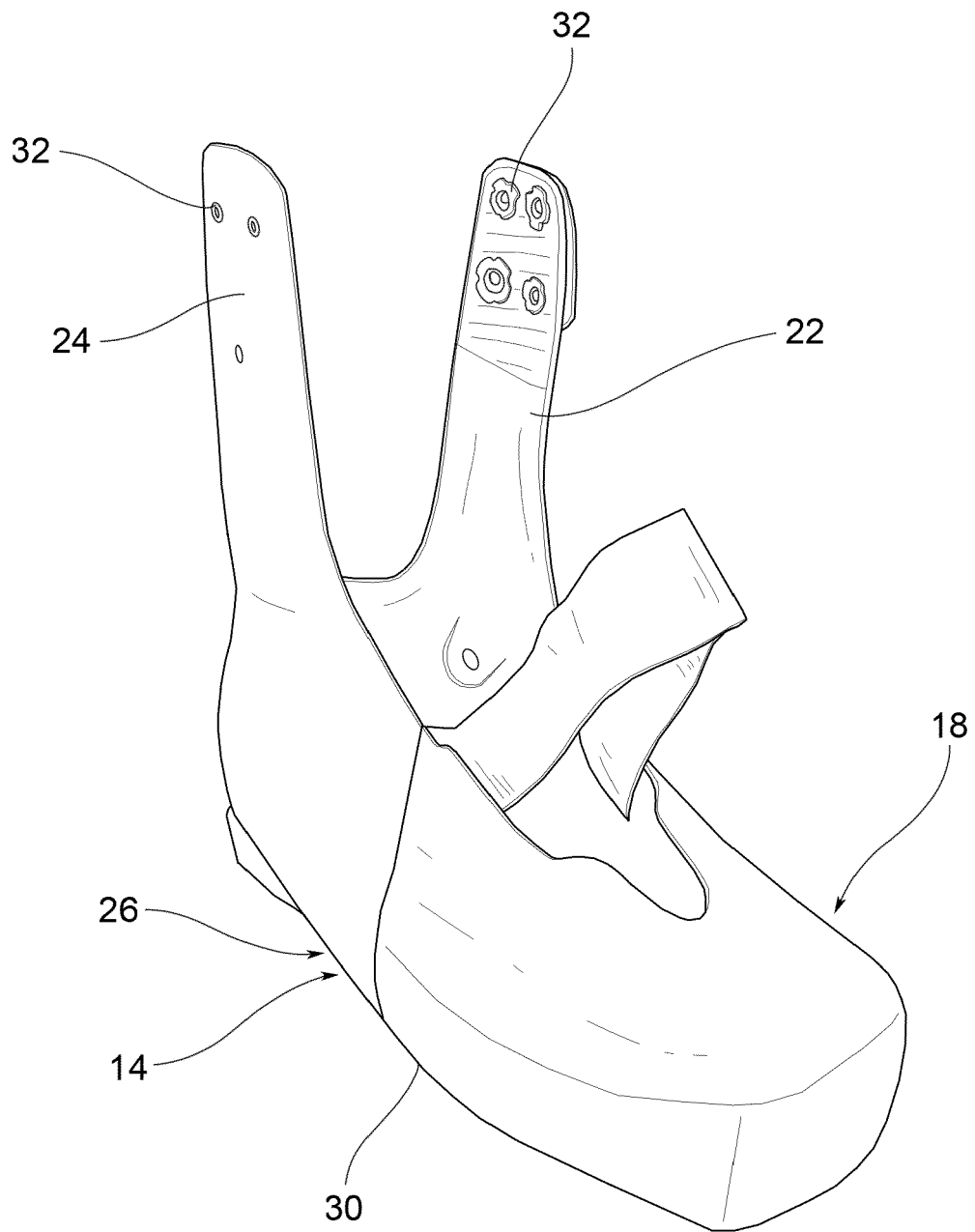


FIG.4

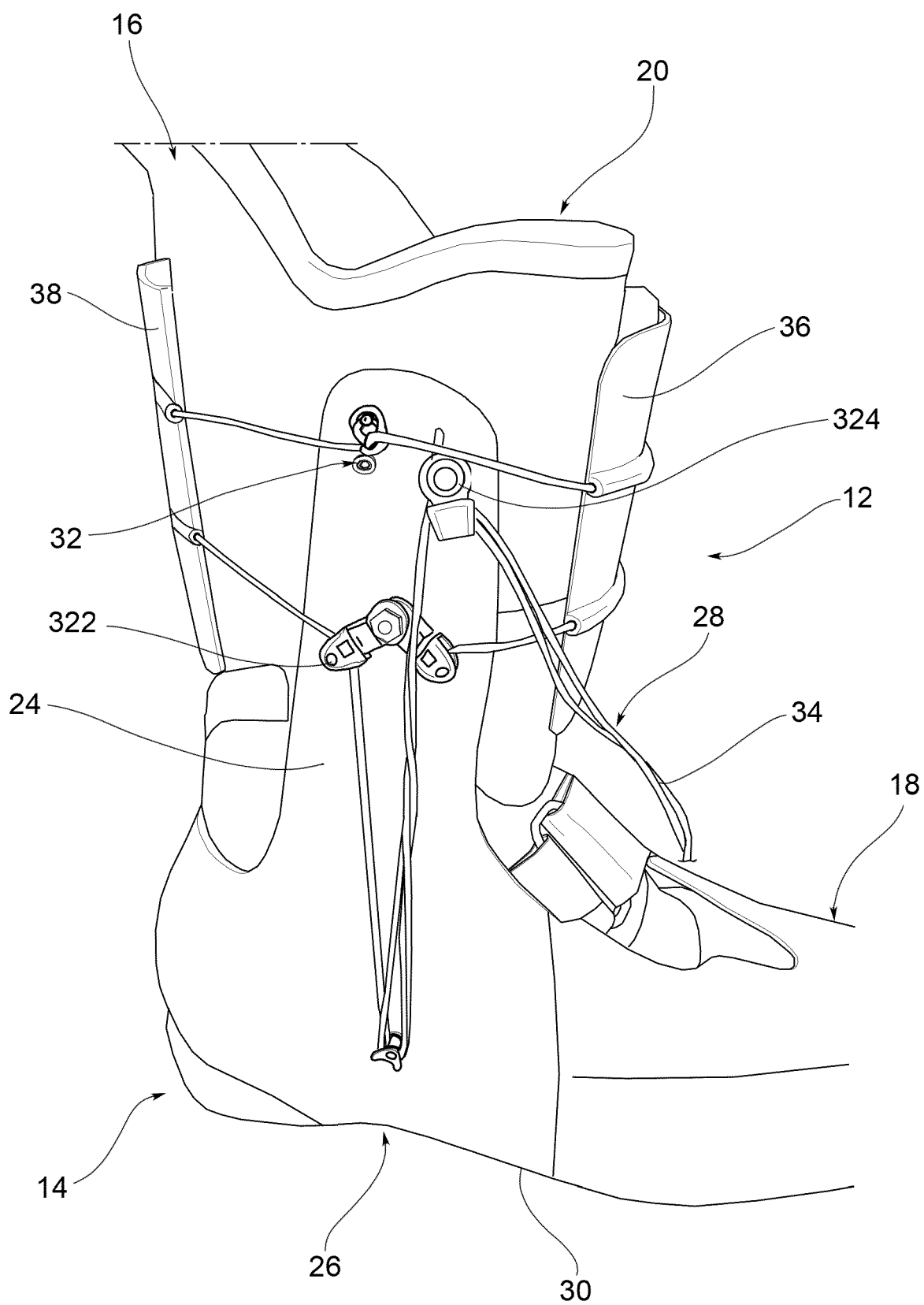


FIG.5

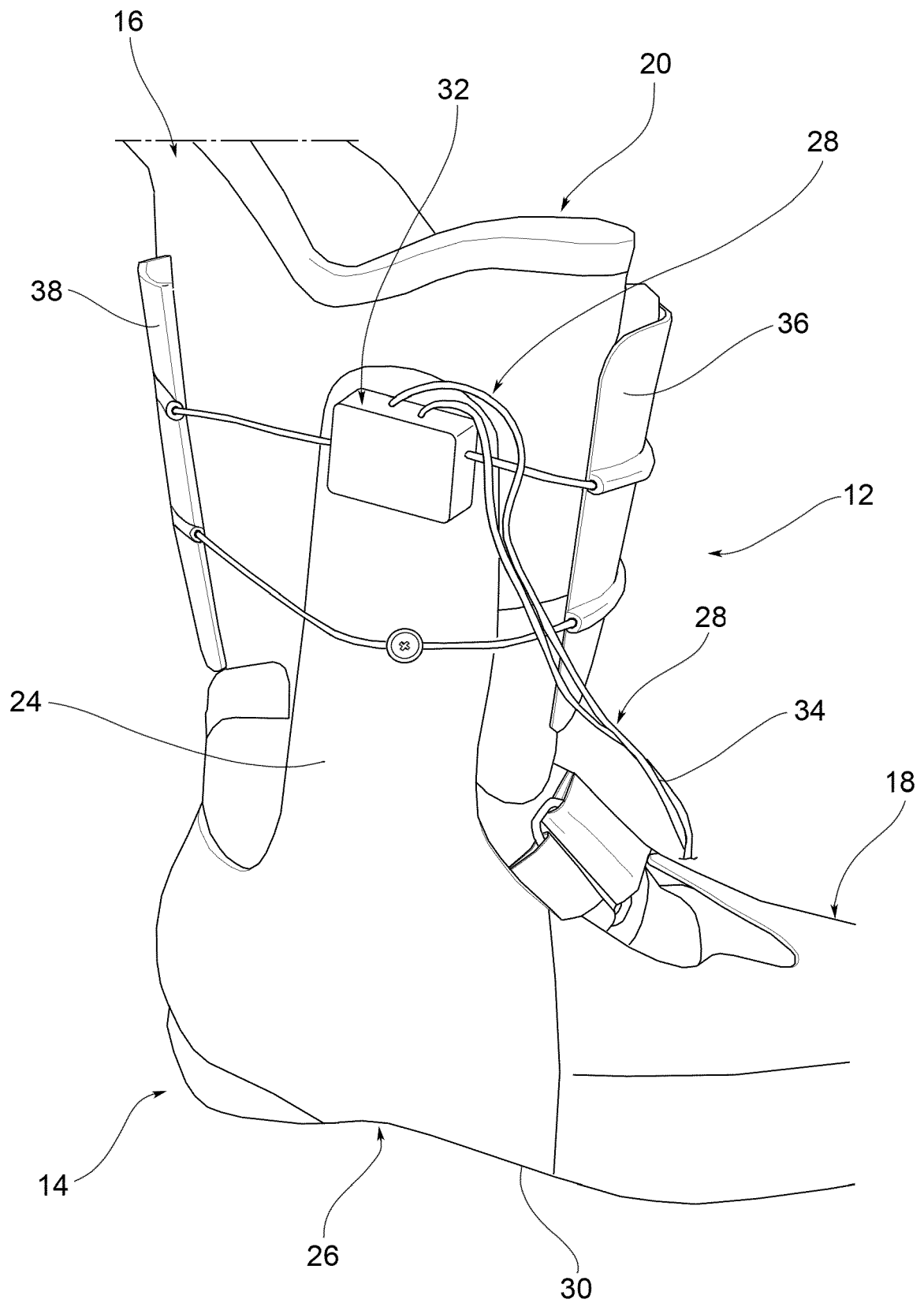


FIG.6

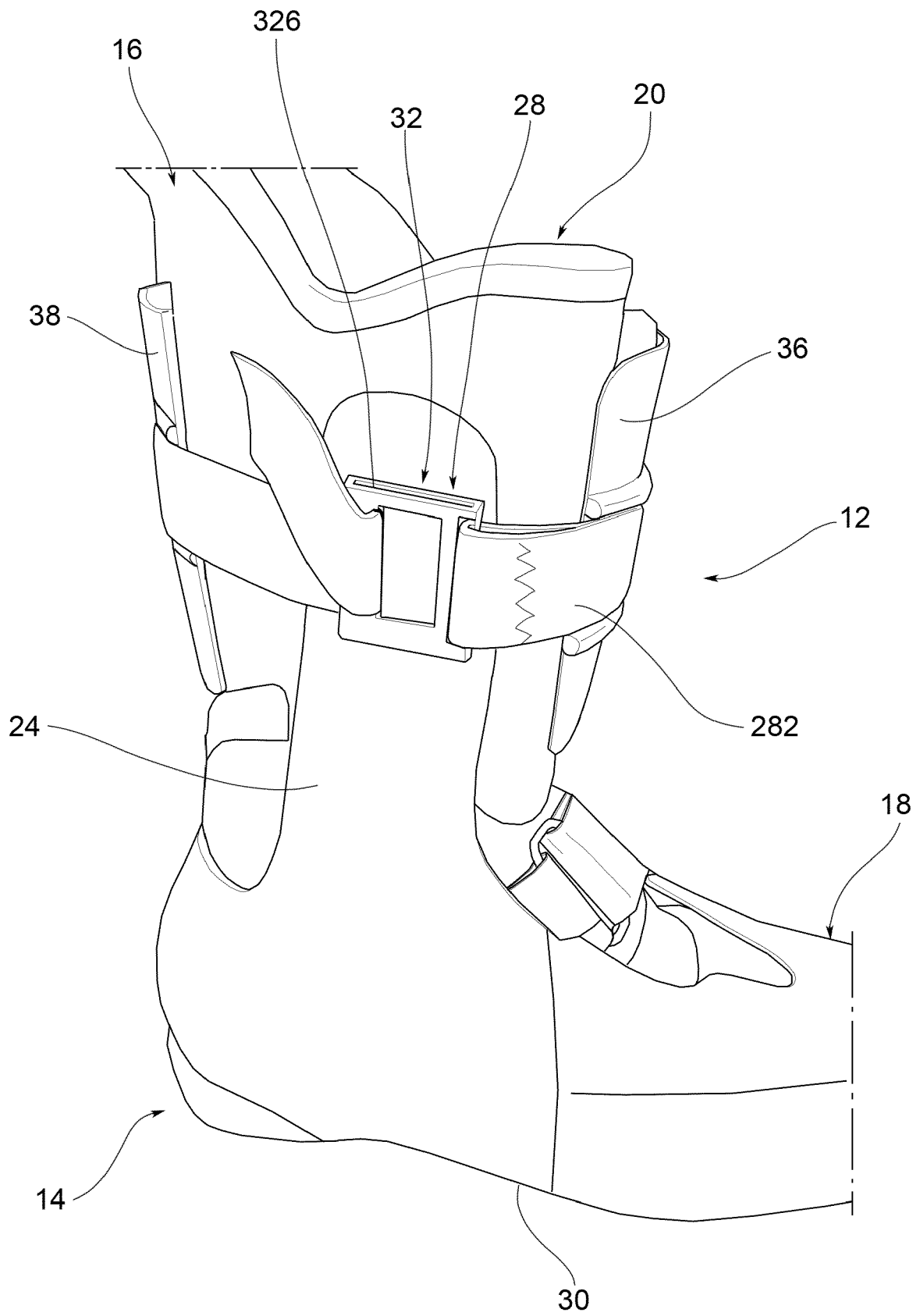


FIG.7



EUROPEAN SEARCH REPORT

 Application Number
 EP 19 21 0695

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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	WO 91/07889 A1 (ALFA SKOFABRIK AS [NO]) 13 June 1991 (1991-06-13)	1-8,11	INV. A43B5/04
Y	* page 3, line 20 - page 5, line 28 * * figure 1 *	9,10	
Y	----- KR 100 832 882 B1 (I YEONG SEOK [KR]) 28 May 2008 (2008-05-28)	9,10	
A	* paragraph [0019] - paragraph [0057] * * figures 1-6 *	1	
A	----- CH 675 526 A5 (FIRE GENERATION ETS) 15 October 1990 (1990-10-15) * column 8, line 6 - line 23 * * figure 1 *	1,9,10	
			TECHNICAL FIELDS SEARCHED (IPC)
			A43B
The present search report has been drawn up for all claims			
Place of search The Hague		Date of completion of the search 7 April 2020	Examiner Papatheofrastou, M
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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 EPO FORM 1503 03.82 (P04C01)

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

EP 19 21 0695

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This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report.
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Patent document cited in search report	Publication date	Patent family member(s)	Publication date
WO 9107889 A1	13-06-1991	AU 6894691 A	26-06-1991
		NO 168744 B	23-12-1991
		NO 170314 B	29-06-1992
		WO 9107889 A1	13-06-1991

KR 100832882 B1	28-05-2008	NONE	

CH 675526 A5	15-10-1990	NONE	

EPO FORM P0459

For more details about this annex : see Official Journal of the European Patent Office, No. 12/82