(19) Europäisches Patentamt
European Patent Office
Office européen des brevets

(11) **EP 3 329 793 A1**

(12) **EUROPEAN PATENT APPLICATION**

(43) Date of publication:
06.06.2018 Bulletin 2018/23

(51) Int Cl.:
A43B 5/04 *(2006.01)* ***A63C 9/086*** *(2012.01)*
A63C 9/084 *(2012.01)*

(21) Application number: **17202710.4**

(22) Date of filing: **21.11.2017**

(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:
MA MD

(30) Priority: **22.11.2016 IT 201600117956**

(71) Applicant: **Giemme Arredamenti S.N.C. di Delvai Mauro & C.**
38038 Tesero (Trento) (IT)

(72) Inventor: **DELVAI, Mauro**
38038 Tesero (Trento) (IT)

(74) Representative: **Petruzziello, Aldo**
Racheli S.r.l.
Viale San Michele del Carso, 4
20144 Milano (IT)

(54) **SKI COUPLING SYSTEM FOR MOUNTAINEERING SKI BOOT**

(57) System of coupling to the ski for mountaineering ski boot (1), comprising coupling means (20) placed to the rear of the heel (3) of the boot (1), apt to engage with reciprocal coupling means (12) provided on a heel piece (10) positioned on the ski (11), wherein in said heel (3) a slide (4) is provided, movable between a position protruding rearwardly from the heel (3) interfering with said coupling means (20) to prevent engagement thereof with the reciprocal coupling means (12) on the heel piece (10), and a position retracted in the heel (3) for releasing said coupling means (20).

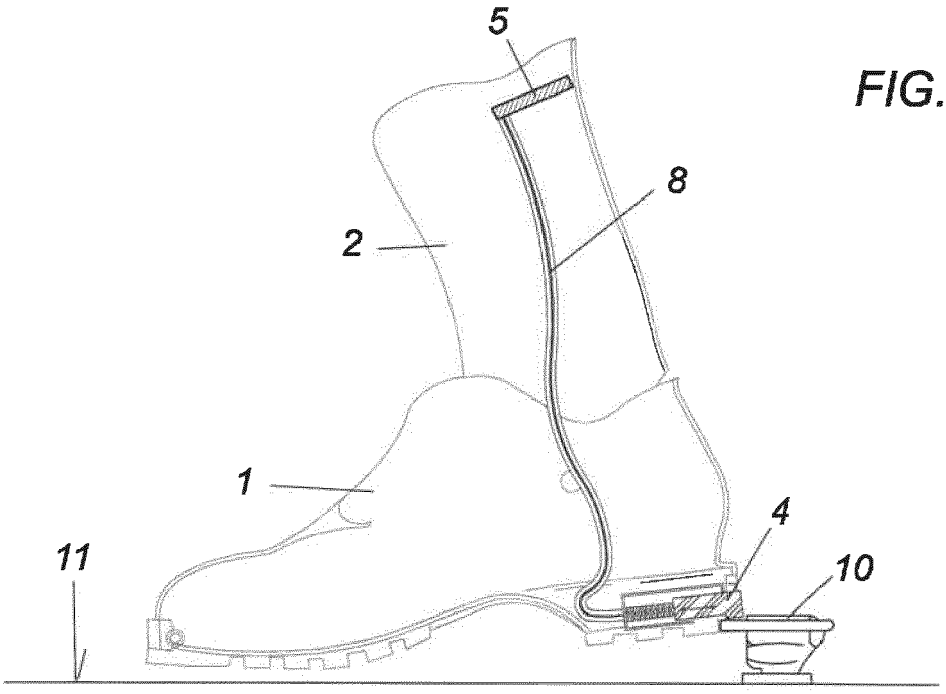


FIG. 1

EP 3 329 793 A1

Description

[0001] The object of the present invention is a system of coupling to the ski for mountaineering ski boot, apt to facilitate the change of arrangement between uphill and downhill.

[0002] Mountaineering ski bindings and boots are different with respect to the traditional ones. All the boots for practising mountaineering skiing are on average lighter and have an adjustment or joint on the leg which allows the releasing of the articulation of the ankle to then be able to walk easily uphill and then lock again and support the leg in the downhill phase. All the bindings ensure the possibility of having the "heel free" for progressing uphill and the foot locked in the downhill skiing.

[0003] The coupling systems for mountaineering ski boots available commercially involve the need to handle and modify the position of the heel piece, that is of the component placed on the ski with which the heel of the boot is engaged, when it is required to change from the uphill arrangement to the downhill arrangement and vice versa.

[0004] This entails the obligation of the user, or of the athlete in the case of competition mountaineering skiing, to bend until arriving with the hands or with other instruments at the binding and performing the movement foreseen according to the binding model used. Consequently there is a waste of time and of energy especially in the competitions that are now increasingly extreme and of very high level.

[0005] The object of the invention is that of eliminating the disadvantages of the prior art. More particularly an object of the invention is that of providing a system of coupling to the ski for mountaineering ski boots which allows a change from the uphill arrangement to the downhill one with a single action without having to bend completely to act on or turn the binding/heel piece on the ski.

[0006] Another object of the invention is that of providing such a coupling system which guarantees maintaining of the uphill arrangement without having to perform operations on the binding present on the ski.

[0007] Yet another object of the invention is that of providing such a coupling system which is simple and economical to manufacture.

[0008] These objects are achieved by the coupling system for mountaineering ski boot according to the invention which has the features of the appended independent claim 1.

[0009] Advantageous embodiments of the invention are stated in the dependent claims.

[0010] Substantially, the system of coupling to the ski for mountaineering ski boot comprises coupling means placed to the rear of the heel of the boot, apt to engage with reciprocal coupling means provided on a heel piece positioned on the ski, wherein in the heel of the boot a slide is provided, movable between a position protruding rearwardly from the heel interfering with said coupling means to prevent engagement thereof with the reciprocal coupling means on the heel piece, and a position retracted in the heel for releasing said coupling means.

[0011] Further features of the coupling system for mountaineering ski boot according to the invention will be made clearer by the following detailed description, referred to one of its embodiments purely by way of a non-limiting example, illustrated in the accompanying drawings, in which:

- Figure 1 is a side view showing a mountaineering ski boot with heel free in uphill arrangement;
- Figure 1a is an enlargement of a detail of Figure 1 showing the coupling system according to the invention;
- Figure 1b is a "fictitious" view of the boot of Figure 1 seen from below;
- Figures 2, 2a and 2b are views similar to those of Figures 1, 1a, 1b showing the boot with heel coupled in downhill arrangement;
- Figure 3 shows a series of schematic perspective views relating to successive phases during the change from an uphill arrangement to a downhill arrangement.

[0012] Referring for the time being to Figures 1 and 2, reference numeral 1 denotes a mountaineering ski boot provided with a leg 2. Reference numeral 10 denotes a heel piece, to be considered substantially in itself known, mounted on a ski denoted schematically by the line 11.

[0013] At the heel of the boot 1 means of coupling to the heel piece 10 are provided, made up of in particular a plate 20 appropriately shaped, apt to engage with corresponding means 12, constituted in particular by a pair of bars, provided on the heel piece 10, as can be seen better in the schematic views of Figure 3.

[0014] The reciprocal coupling means 20, 12 are to be considered in themselves known and normally require intervention on the heel piece 10 to change from the uphill arrangement to the downhill arrangement, an operation which is avoided with the coupling system according to the invention, as will be described here below.

[0015] In a manner in itself known, on the leg 2 of the boot 1 a lever 4 is provided, only schematised in Figures 1 and 2, movable from the position of Figure 2 wherein it locks the articulation of the ankle to support the leg when the ski is in downhill arrangement, to the position of Figure 1 wherein it frees the articulation of the ankle in order to be able to walk easily when the ski is in uphill arrangement.

[0016] Naturally the lever 4 which, it is repeated, has only been schematised in Figures 1 and 2, can be placed in a position different from the one illustrated.

[0017] According to the invention in the heel 3 of the boot 1 a slide 5 is placed, sliding in a guided manner in a drawer 6 under the action of elastic means, in particular a spring 7.

[0018] Connected to the slide 5 is a cord 8, for example a cable in steel, Kevlar, Dyneema and the like, inserted

in the sheath 9, by pulling which the slide 5, which normally projects at the rear from the heel 3 under the action of the spring 7, interfering with the plate 20 (Figure 1), is made to retract into the heel 3 (Figure 2), freeing the plate 20.

[0019] According to the preferred embodiment of the invention, the free end of the cable 8 is restrained to the lever 5 of adjustment of the joint on the leg 2, so as to intervene on the slide 4 with the same operation which locks/unlocks the leg 2 during the change from one arrangement to the other of the ski.

[0020] It is however clear that the cable 8 of actuation of the slide 4 can be controlled independently by the lever 5 for locking/unlocking of the leg 2.

[0021] Referring to the accompanying drawings, a brief description is now given of the functioning of the coupling system according to the invention.

[0022] When in uphill arrangement (Figures 1, 3a, 3b) the lever 5 keeps the leg 2 unlocked and simultaneously loosens the cable 8, allowing the spring 7 to push the slide 4 outside of the heel 3 in interference with the plate 20.

[0023] In this way the coupling of the plate 20 with the bars 12 of the heel piece is prevented, allowing free walking of the skier uphill.

[0024] When it is necessary to change from the uphill arrangement to the downhill arrangement, actuation of the lever 5 which causes locking of the leg 2 places simultaneously under tension the cable 8, which produces the retraction of the slide 4 in the heel 3 in contrast to the action of the spring 7, freeing in this way the plate 20, which can go into engagement with the bars 12 of the heel piece 10, without having to perform any intervention on the heel piece, as usually occurs in the prior art.

[0025] When it is required again to change to the uphill arrangement, after having released the boot 1 from the ski in traditional manner, acting on the tip, the actuation of the lever 5 causes the release of the leg 2 in uphill arrangement and the simultaneous exit of the slide 4 which, interfering with the plate 20, will prevent the coupling thereof to the heel piece 10, without having to perform any manual intervention on the latter.

[0026] From what has been disclosed, the advantages of the system of coupling of the mountaineering ski boot according to the invention appear clear, which allows a change in a simple and rapid manner from the uphill arrangement to the downhill one and vice versa.

[0027] Naturally the invention is not limited to the particular embodiment described previously and illustrated in the accompanying drawings, but numerous detail changes may be made thereto, within the reach of the person skilled in the art, without thereby departing from the scope of the same invention, as defined by the appended claims.

Claims

1. System of coupling to the ski for mountaineering ski boot (1), comprising coupling means (20) placed to the rear of the heel (3) of the boot (1), apt to engage with reciprocal coupling means (12) provided on a heel piece (10) positioned on the ski (11), **characterised in that** in said heel (3) a slide (4) is provided, movable between a position protruding rearwardly from the heel (3) interfering with said coupling means (20) to prevent engagement thereof with the reciprocal coupling means (12) on the heel piece (10), and a position retracted in the heel (3) for releasing said coupling means (20).

2. Coupling system according to claim 1, wherein a cable (8) is provided, the tensioning of which causes the retraction of said slide (4) in contrast to the action of elastic means (7) that tend normally to push the slide (4) into the position protruding rearwardly from the heel (3).

3. Coupling system according to claim 2, wherein said cable (8) is actuated by a lever (5) for locking/unlocking the leg (2) of the boot (1) in downhill or uphill arrangement.

4. Coupling system according to any one of the preceding claims, wherein said slide (4) is housed in a guided manner in a drawer (6) provided in the heel (3).

5. Coupling system according to any one of the preceding claims, wherein said coupling means (20) provided on the boot (1) consist of a conveniently shaped plate, and said reciprocal coupling means provided on the heel piece (10) consist of a pair of bars (12).

6. Coupling system according to claim 2, wherein said elastic means are constituted by a compression spring.

7. Coupling system according to claim 2, wherein said cable (8) is a cable in steel, Kevlar, Dyneema and the like, inserted in a sheath (9).

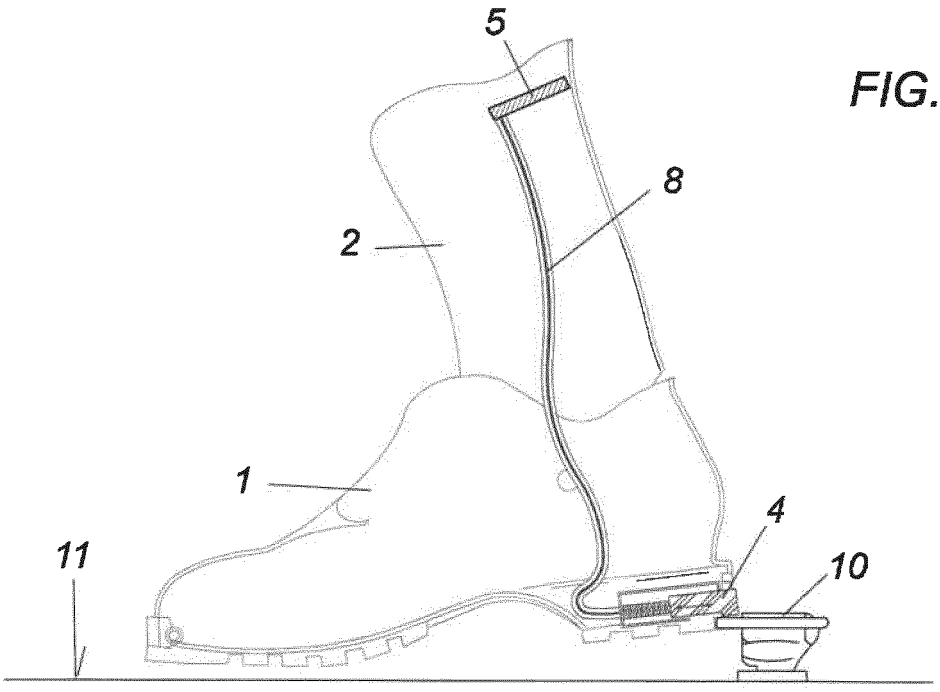


FIG. 1

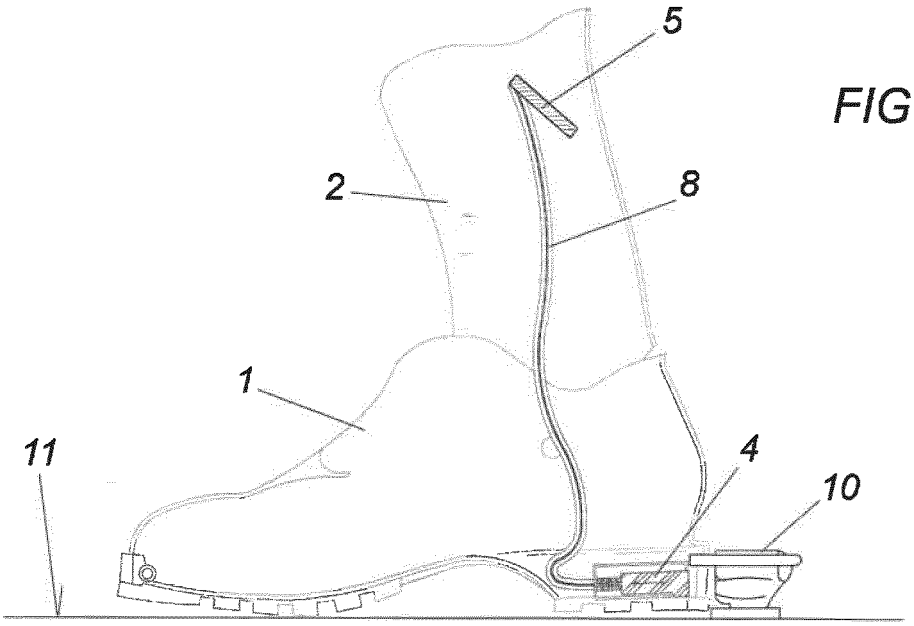


FIG. 2

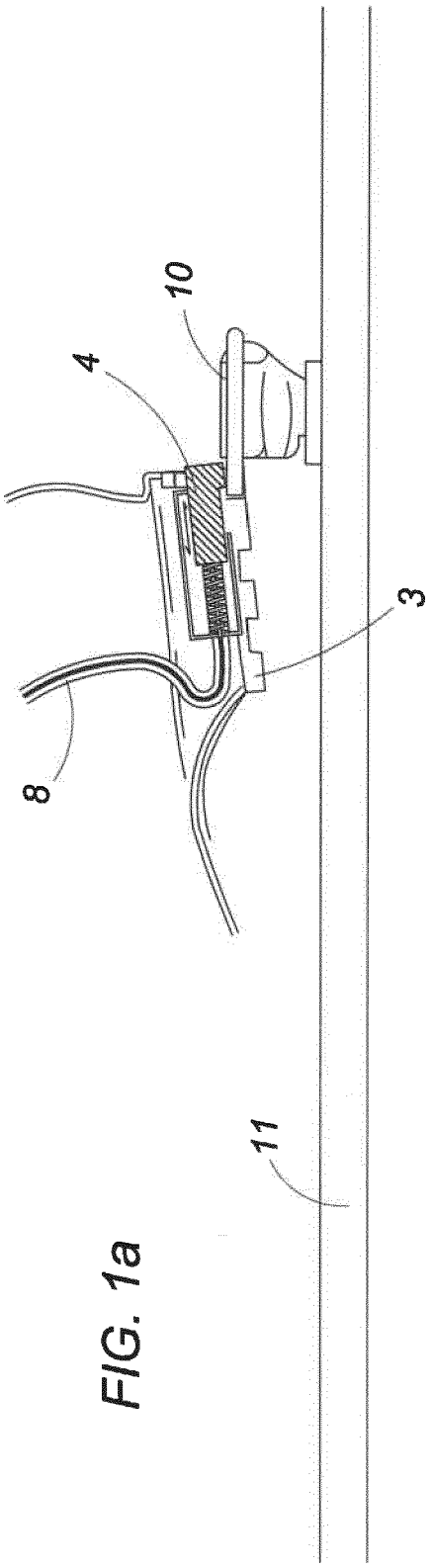


FIG. 1a

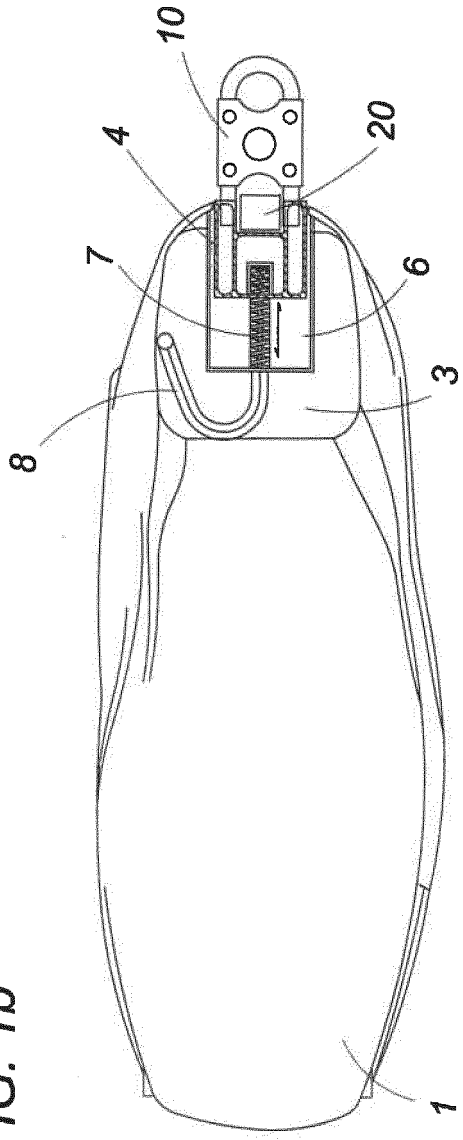


FIG. 1b

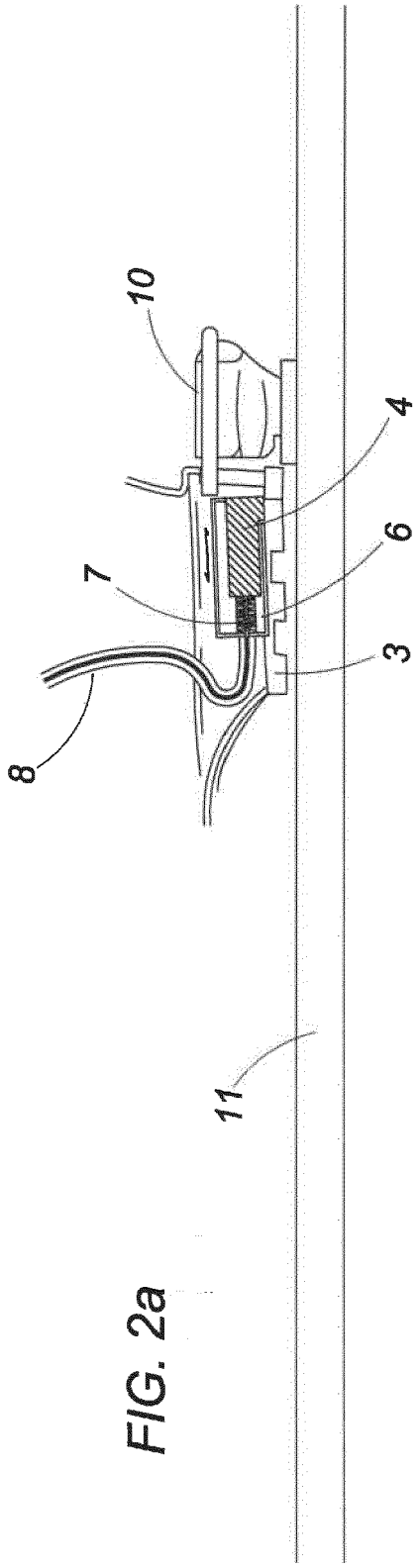


FIG. 2a

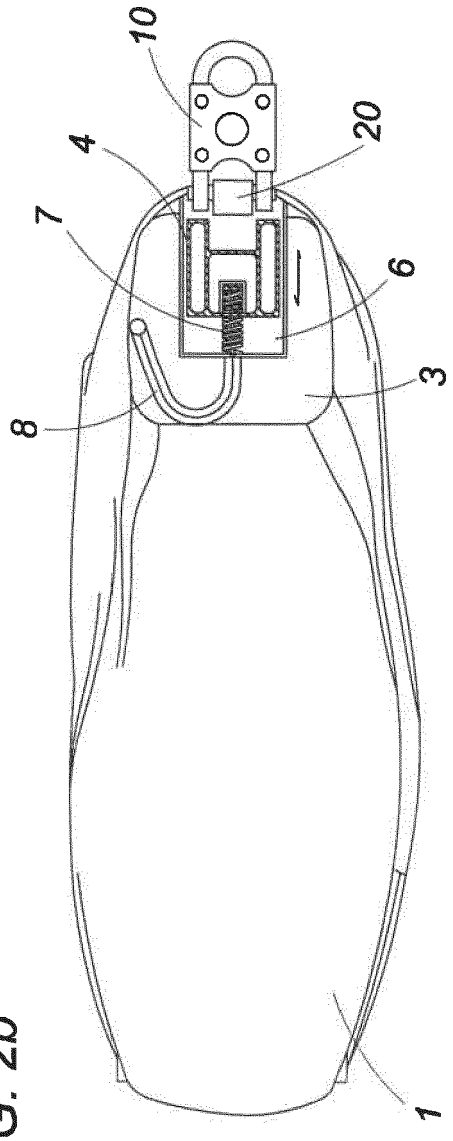
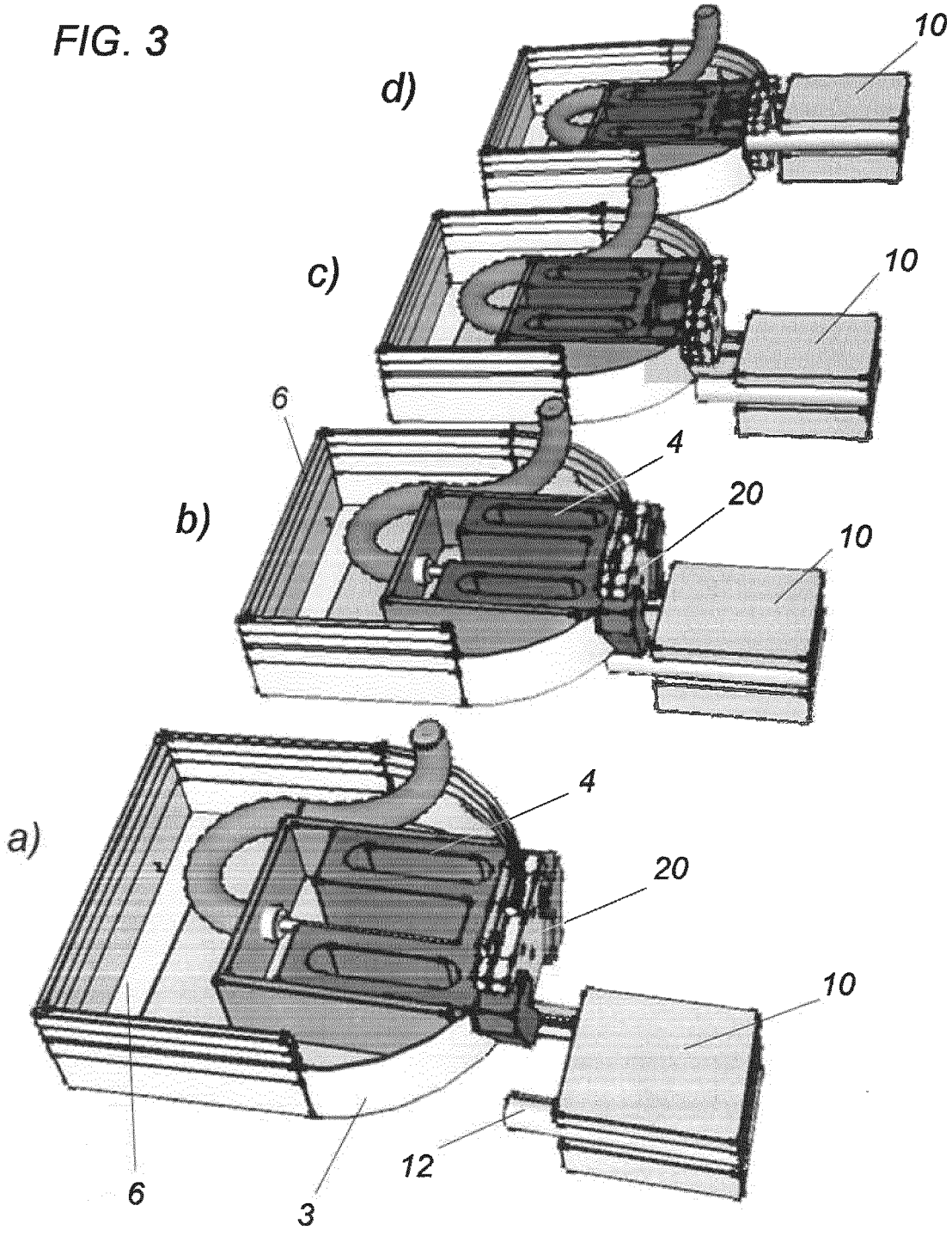


FIG. 2b

FIG. 3



Europäisches Patentamt
European Patent Office
Office européen des brevets

EUROPEAN SEARCH REPORT

Application Number
EP 17 20 2710

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	DE 20 2008 006132 U1 (RADL KURT [DE]) 24 July 2008 (2008-07-24) * paragraphs [0007], [0010], [0026]; figures 1-6 *	1-7	INV. A43B5/04 A63C9/086 ADD. A63C9/084
A	US 2009/224526 A1 (BILDNER HEINZ [DE] ET AL) 10 September 2009 (2009-09-10) * paragraph [0007] - paragraph [0009]; figures 1-3 *	1-7	
A	DE 10 2008 006069 A1 (UNIV MUENCHEN TECH [DE]) 30 July 2009 (2009-07-30) * paragraphs [0001], [0021], [0053] - [0057]; figures 4-4e *	1-7	
A	EP 2 932 863 A1 (SCARPA CALZATURIFICIO SPA [IT]) 21 October 2015 (2015-10-21) * paragraph [0049] - paragraph [0050]; figures 2-4 *	1-7	
A	WO 2014/064657 A1 (SCARPA CALZATURIFICIO SPA [IT]) 1 May 2014 (2014-05-01) * page 15, paragraph 2; figures 2-4 *	1-7	TECHNICAL FIELDS SEARCHED (IPC) A43B A63C
A	US 2007/204486 A1 (FENATO PIERO [IT]) 6 September 2007 (2007-09-06) * abstract; figures 1-4 *	1-7	

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
Munich	23 April 2018	Brunie, Franck

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

EPO FORM 1503 03.82 (P04C01)

ANNEX TO THE EUROPEAN SEARCH REPORT ON EUROPEAN PATENT APPLICATION NO. EP 17 20 2710

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
The European Patent Office is in no way liable for these particulars which are merely given for the purpose of information.

23-04-2018

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
DE 202008006132 U1	24-07-2008	NONE	
US 2009224526 A1	10-09-2009	NONE	
DE 102008006069 A1	30-07-2009	NONE	
EP 2932863 A1	21-10-2015	NONE	
WO 2014064657 A1	01-05-2014	EP 2911541 A1	02-09-2015
		US 2015250257 A1	10-09-2015
		WO 2014064657 A1	01-05-2014
US 2007204486 A1	06-09-2007	AT 9927 U1	15-06-2008
		IT VE20060010 U1	04-09-2007
		US 2007204486 A1	06-09-2007

EPO FORM P0459

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