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

(11) EP 1 118 358 A1

(12) EUROPEAN PATENT APPLICATION

(43) Date of publication:
25.07.2001 Bulletin 2001/30

(51) Int Cl.[7]: **A63C 5/03**, A63C 9/00

(21) Application number: **00830025.3**

(22) Date of filing: **19.01.2000**

(84) Designated Contracting States:
AT BE CH CY DE DK ES FI FR GB GR IE IT LI LU MC NL PT SE
Designated Extension States:
AL LT LV MK RO SI

(71) Applicant: **Citi, Vito**
56021 Cascina (PI) (IT)

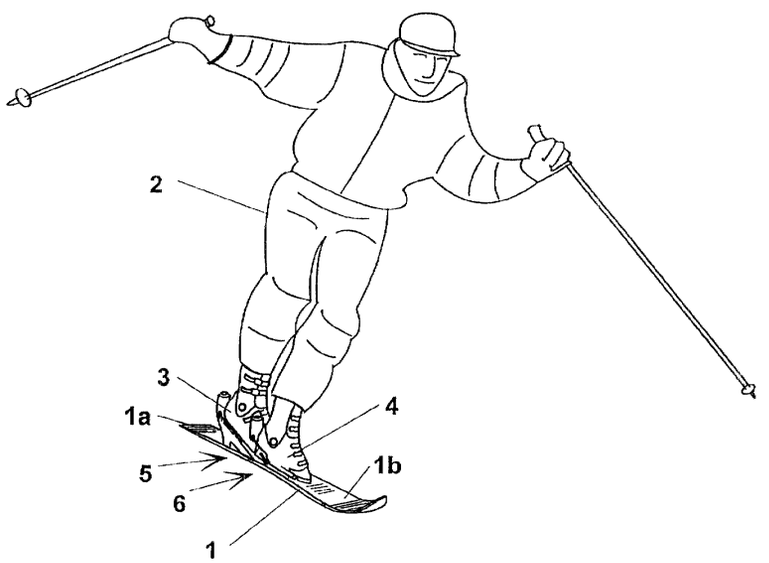
(72) Inventor: **Citi, Vito**
56021 Cascina (PI) (IT)

(74) Representative: **Celestino, Marco**
ABM, Agenzia Brevetti & Marchi,
Via A. Della Spina 40
56125 Pisa (IT)

(54) Monoski

(57) A monoski and fastening system (5,6) for ski-boots (3,4) arranged aligned behind to each other in longitudinal direction with respect to the ski (1). Rear (5) and front (6) binding means have respectively a rear plate (15) and a front plate (16) located between the ski (1) and the ski-boots (3,4). The rear plate (15) has a heel (15a) of predetermined height whereby the rear boot (3) is arranged with sole inclined in longitudinal direction with respect to the ski (1). The plates (16, 15) can be formed by a single element (100) and can have a transversal inclination (15',15'', 16',16''), so that each boot (3,4) is inclined towards the outside. The binding means (5,6) can have a toe piece for (25) the rear binding (5) and a hell piece (36) for the front binding (6) integrated in a single intermediate piece (56), which can also being slidable with respect to the ski (1), whereby locking the rear boot (3) also the front boot (4) is locked. The monoski allows a skiing with sharp turns, allows a scooter running easily and allows to get up even with both ski-boots locked.

Fig. 1



EP 1 118 358 A1

Description

Field of the invention

[0001] The present invention relates to the sport of skiing and more precisely relates to a monoski and to the ski-boots binding system thereof to allow a monoski skiing.

Background of the invention

[0002] Two types of monoski are known, i.e. sport equipment consisting in a single ski having a couple of ski-boot bindings so that the skier can go downhill on the snow with a single ski.

[0003] A first type of monoski provides two parallel bindings arranged longitudinally on the ski. A second type of monoski is the snowboard, which provides a couple of bindings parallel to each other but transversal to the ski, that consists in a board with larger width than a normal ski.

[0004] It is an object of the present invention to provide a monoski with a ski-boot binding system that is different from the snowboard and from the monoski with parallel longitudinal bindings.

Summary of the invention

[0005] These and other objects are achieved from the monoski according to the invention and from the binding system thereof the ski-boots, whose characteristic is that the binding means are arranged aligned behind each other in longitudinal direction with respect to the ski.

[0006] Preferably, the binding means comprise a front binding and a rear binding. The rear binding has a rear plate located between ski and boot and with a heel of predetermined height. This way the rear boot is arranged with sole inclined in longitudinal direction with respect to the ski.

[0007] Also the front binding can have a front support plate that is arranged between the ski and the boot.

[0008] To make easier skiing with stiff ski-boots the rear plate and the front plate have an inclination on a transversal direction, so that each boot is inclined outwardly. In the case wherein binding means are mounted for skiing with the right boot ahead and left boot behind, the front plate has left thickness larger than the right thickness, whereas the rear plate has right thickness larger than the left thickness. On the other hand, if the binding means are mounted for skiing with the left boot ahead and right boot behind, the binding means have front plate with the right thickness larger than the left thickness and rear plate with the right thickness shorter than the left thickness.

[0009] Both binding means comprise a toe piece and a heel piece. The toe piece of the rear binding and the heel piece for front binding are as closer as possible to each other. Advantageously they are integrated in a single intermediate piece. The intermediate piece can be formed by the heel piece of the front binding wherein a toe piece for the rear binding is made.

[0010] The front plate and the rear plate can be formed by a single plate element connected to the ski. This single plate element is preferably shaped in order to have a front plain portion inclined transversally and a rear portion raised longitudinally and inclined transversally in direction opposite to the front portion.

[0011] In a possible different embodiment, the intermediate piece is slidably engaged with respect to the ski, whereby the locking movement of the rear boot causes also the front binding heel piece movement, since the intermediate piece is pushed by the rear boot against the front boot, which is also engaged with the front binding toe-piece. The intermediate piece is advantageously slidably engaged up to a snap-fit locking in the skiing position, whereby if the rear boot is released the front boot remains locked.

Brief description of the drawings

[0012] Further characteristics and the advantages of the monoski and of the ski boots binding system according to the present invention will be made clearer with the following description of an embodiment thereof, exemplifying but not limitative, with reference to attached drawings, wherein:

- figure 1 shows a perspective view from the top of a skier on a monoski according to the present invention;
- figure 2 shows an elevational partial view of the monoski of figure 1 and ski-boots mounted;
- figure 3 shows an elevational partial view of the monoski of figure 1 and ski-boots removed;
- figure 4 shows a perspective view of a monoski according to the invention without binding system;
- figure 5 shows a partial top plan view of the monoski of figure 3;
- figures 6 and 7 show an elevational partial side view and a top plan partial view respectively from the above of the monoski of figure 3 with the single support plate for both the ski-boots (not shown);
- figures 8 and 9 show a cross sectional view of the front plate and of the rear plate of the binding means of the monoski of figure 5 and of the front and rear portion of the binding means plate respectively according to arrows VIII-VIII and XI-XI of the monoski of figure 7;
- figure 10 shows a different embodiment of the monoski of figures 5 and 7 with an slidably engaged and lockable intermediate piece of the binding means.

Description of a preferred embodiment

[0013] With reference to figure 1, a monoski accord-

ing to the present invention, indicated with the numeral 1, is used by a skier 2 that wears a right ski-boot 3 and a left ski-boot 4. The right boot 3 and the left boot 4 are connected to the monoski 1 by means of respectively a rear binding 5 and a front binding 6.

[0014] Binding means 5 and 6 are respectively connected to the monoski 1 aligned longitudinally in rearward position towards the tail la and forward position towards the tip 1b, respectively.

[0015] This way, the skier can ski with right boot behind the left boot so that the ski-boots are aligned, in the position of figure 1. This position allows an ease skiing since when making a turn the right knee follows the left knee.

[0016] Obviously, by reversing the binding means so that the front binding is for the right boot and the rear binding is for the left boot, skiing is possible as well. When practising at the beginning, the skier will choose the position with the left boot ahead or behind, that fits best for him/her.

[0017] With reference to figure 2 and to figure 3, rear and front binding means 5,6 comprise respectively a rear binding toe piece 25 and a front binding toe piece 26 as well as a rear binding heel piece 35 and a front binding heel piece 36 for the ski-boots. The rear binding 5 has also a rear plate 15 located between ski 1 and rear boot 3. Rear plate 15 has a heel 15a of predetermined height whereby rear boot 3 is arranged with sole inclined forward in longitudinal direction with respect to ski 1.

[0018] Also front binding 6 has a front support plate 16 that is arranged between ski 1 and front boot 4.

[0019] As shown in figure 4, ski 1 can be wider than a standard ski, for example with tail 1a of 12 cm, a central portion of 10 cm and tip 1b of 15 cm.

[0020] For making easier skiing with stiff ski-boots, rear plate 15 and front plate 16 have an inclination on a transversal direction, shown in figures 8 and 9, so that the boot 3 and 4 are always inclined outwardly. In the case wherein binding means 5 and 6 are mounted for skiing with the right boot 3 ahead and left boot 4 behind, front plate 16 has left thickness 16' larger than right thickness 16", whereas rear plate 15 has right thickness 15" larger than the left thickness 15'. On the other hand, if the binding means are mounted for skiing with left boot 4 ahead and right boot 3 behind, the binding means have front plate 16 with right thickness 16" larger than left thickness 16' and rear plate 15 with right thickness 15" shorter than left thickness 15'.

[0021] With reference to figures 6 and 7, toe piece 25 of rear binding 15 and heel piece 36 of front binding 16 are integrated in a single intermediate piece 56. For example, using a heel piece 36 like that of figures 2,3 and 5, toe piece 25 of figures 6 and 7 can be inserted in a seat made in heel piece 36 same. Obviously spring means for a safety release of the rear boot can be provided that operate by rotating under stress on toe piece 25 similar to those provided in front toe piece 26 of known art.

[0022] The front plate and the rear plate can be made, as shown in figures 6 and 7, by a single plate element 100 connected to the ski and shaped in order to have a front plain portion 16 inclined transversally like in fig. 8 and a rear portion 15 raised longitudinally in 15a and inclined transversally in direction opposite to the front portion like in fig. 9.

[0023] Alternatively to the above described examples, as shown in figure 10, intermediate piece 56 can be slidably engaged with respect to ski 1, whereby the locking movement for the rear boot 3 causes also the front binding heel piece 4 to move forward, since the intermediate piece is pushed by the rear boot 3 against front boot 4, in turn engaging with front binding tip piece 26. The slidable intermediate piece 56, once reached the locking position indicated with a continuous line in figure 10, is locked automatically by means of a click mechanism not shown, and that can be unlocked by skier 2 once released the rear boot 3. If the rear boot is released 3 front boot 4 can remain locked for running like a scooter.

[0024] The monoski according to the invention is new with respect to a monoski with parallel bindings and has the following advantages. First of all skiing with sharp turns is allowed owing to the advantageous position of the legs and to the width of the ski. Furthermore, when releasing a boot the movement like a scooter is allowed in case of plain snow fields or slight slopes, or for catching ski-lift means. In fact, the boot that remains fastened to the ski is centred transversally with respect to the ski and does not the cause lateral inclination.

[0025] In case of fall it is possible to get up easily even when both ski-boots are locked. Finally, with respect to the normal two parallel skis, the advantages of any monoski are present in case of fall, since not possibility to sprain the knees because the legs cannot divaricate.

[0026] The foregoing description of a specific embodiment will so fully reveal the invention according to the conceptual point of view, so that others, by applying current knowledge, will be able to modify and/or adapt for various applications such embodiment without further research and without parting from the invention, and it is therefore to be understood that such adaptations and modifications will have to be considered to the equivalent to the specific embodiment. The means and the material to realise the different functions described herein could have a different nature without, for this reason, departing from the field of the invention. It is to be understood that the phraseology or terminology employed herein is for purpose of description and not of limitation.

Claims

1. Monoski and binding system (5,6) for ski-boots (3,4), **characterised in that** the binding system comprises binding means (5,6) that are arranged in

longitudinal direction with respect to the ski (1) aligned behind to each other.

2. Monoski according to claim 1, wherein said binding means (5,6) comprise a front binding (6) and a rear binding (5), the rear binding (5) having a rear plate (15) located between the ski (1) and the boot (3), said rear plate (15) having a heel (15a) of predetermined height whereby the boot (3) is arranged with sole inclined in longitudinal direction with respect to the ski (1).

3. Monoski according to claim 2, wherein said front binding (6) has a front support plate (16) that is arranged between the ski (1) and the boot (4).

4. Monoski according to claim 3, wherein said rear plate (15) and said front plate (16) have a transversal inclination (15', 15", 16',16"), so that the boot (3,4) is inclined outwardly.

5. Monoski according to claim 4, wherein in case of bindings (5,6) mounted for skiing with the right boot (3) ahead and left boot (4) behind, the front plate (16) has left thickness (16') larger than the right thickness (16"), whereas the rear plate (15) has right thickness (15") larger than the left thickness (15').

6. Monoski according to claim 4, wherein in the case of bindings (5,6) mounted for skiing with the left boot ahead and right boot behind, binding means (5,6) have front plate (16) with right thickness larger than the left thickness and rear plate (15) with right thickness shorter than the left thickness.

7. Monoski according to claim 1, wherein said bindings (5,6) comprise a toe piece (25, 26) and a heel piece (35, 36), said toe piece (25) of the rear binding (5) and the heel piece (36) of the front binding (6) being integrated in a single intermediate piece (56).

8. Monoski according to claim 3, wherein said front plate (16) and rear plate (15) are formed by a single piece (100) connected to the ski (1) and shaped in order to have a front plain portion (16) inclined transversally and a rear portion(15) raised longitudinally and inclined transversally in direction opposite to the front portion.

9. Monoski according to claim 7, wherein said intermediate piece (56) is slidably engaged with respect to the ski, whereby the locking movement for the rear boot (3) causes the forward movement also of the front binding heel piece (4), since the intermediate piece (56) is pushed by the rear boot (3) against the front boot (4), in turn with the tip engaged in the toe piece (26).

10. Monoski according to claim 7, wherein said intermediate piece (56) is slidably engaged up to a snap-fit locking in the skiing position, whereby if the rear boot is released the front boot remains locked.

Fig. 1

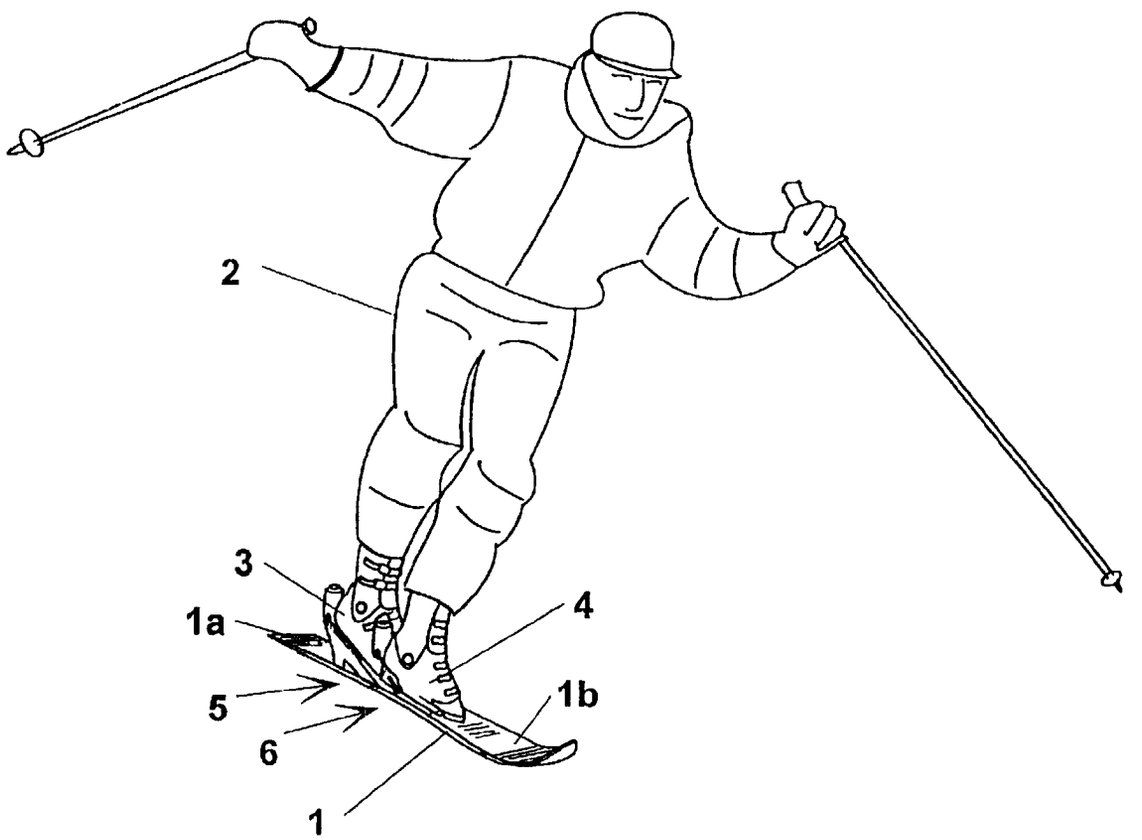


Fig. 2

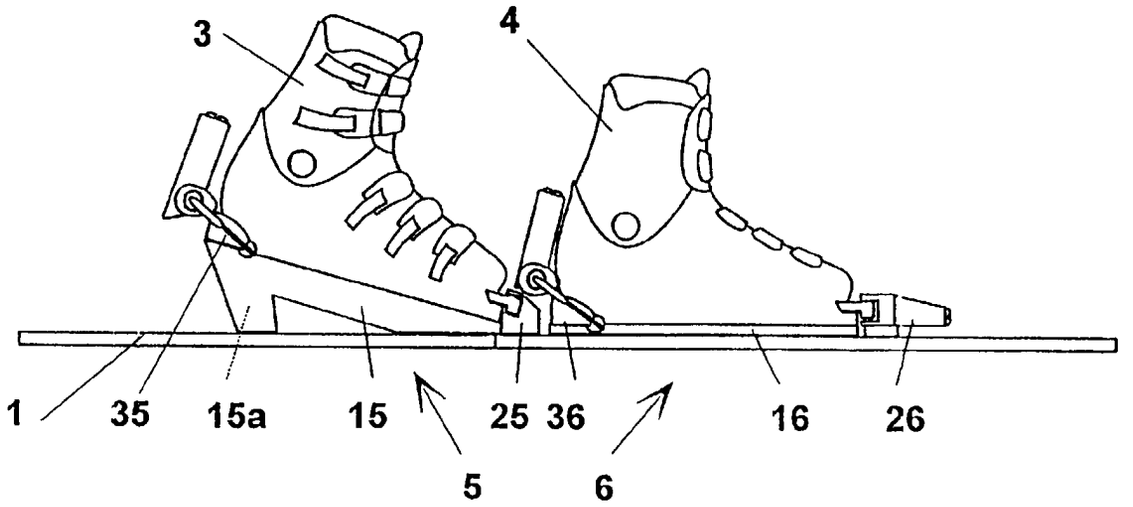
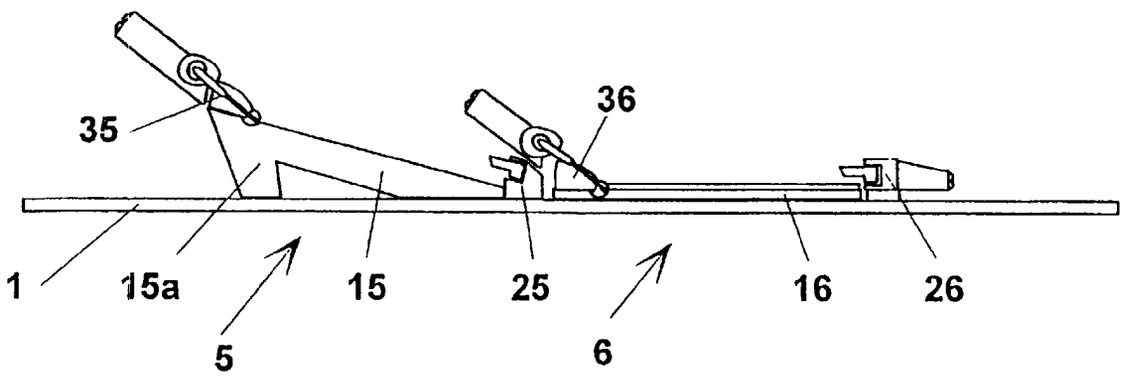


Fig. 3



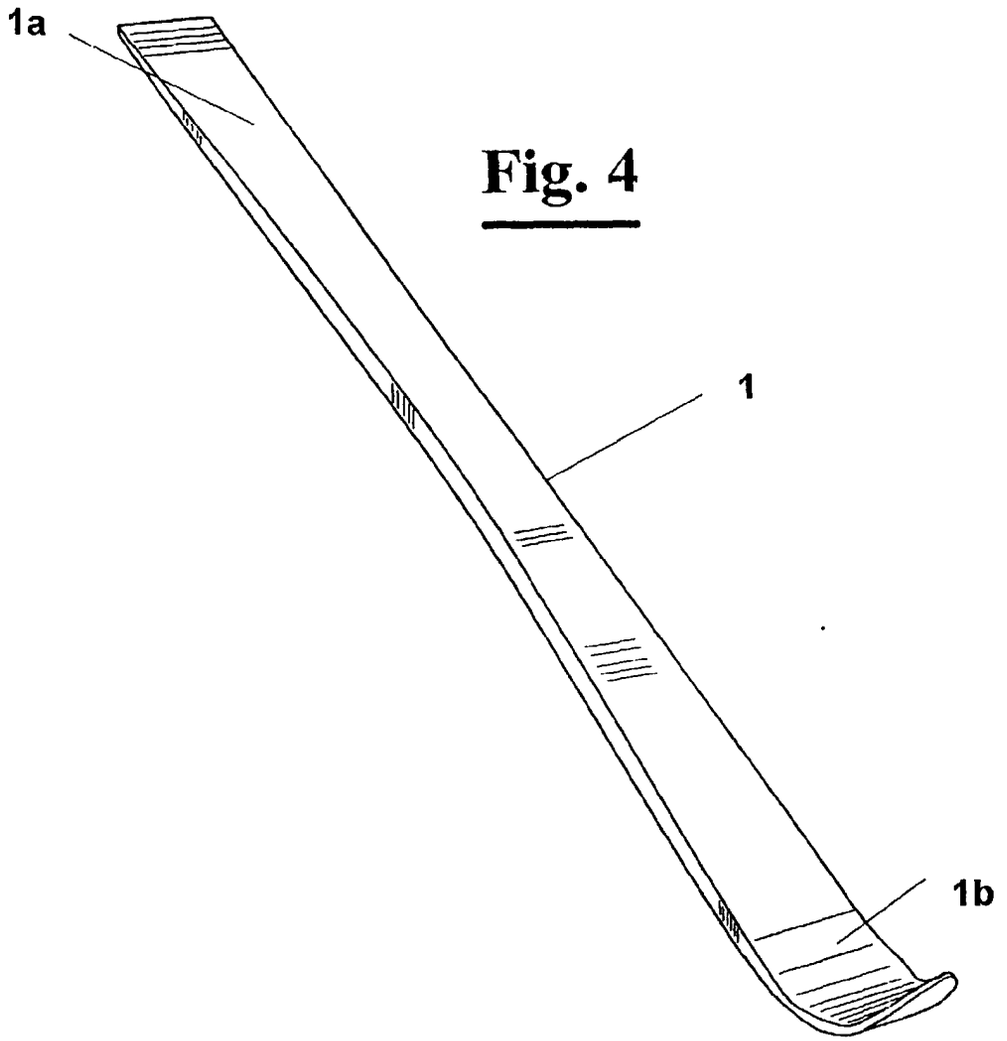


Fig. 4

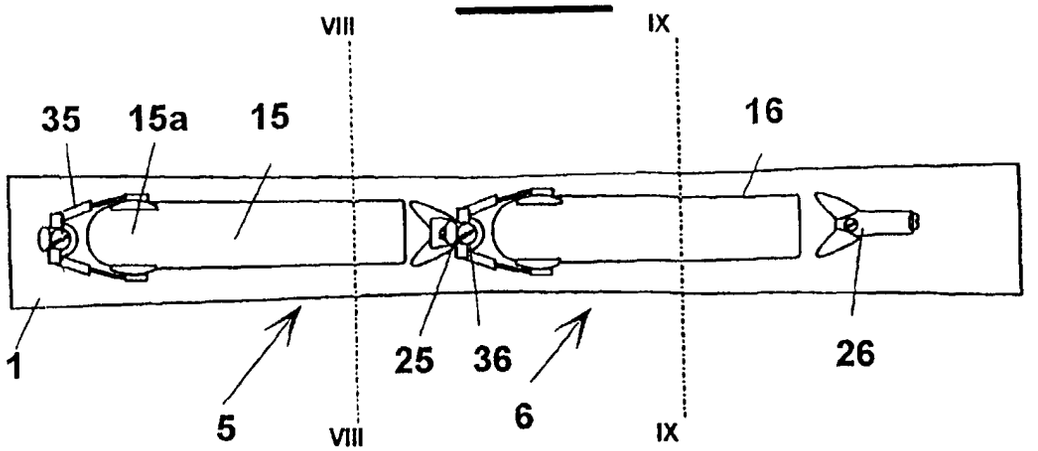


Fig. 5

Fig. 6

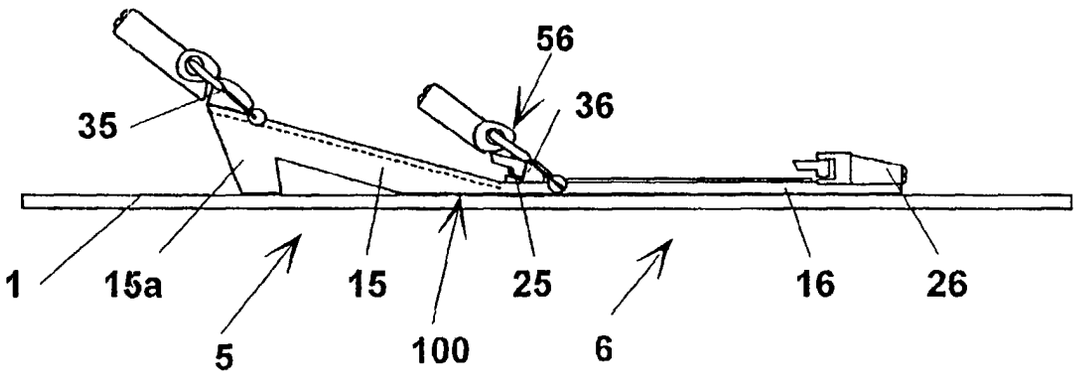

56
36
35
1
15a
15
25
16
26
5
100
6

Fig. 7

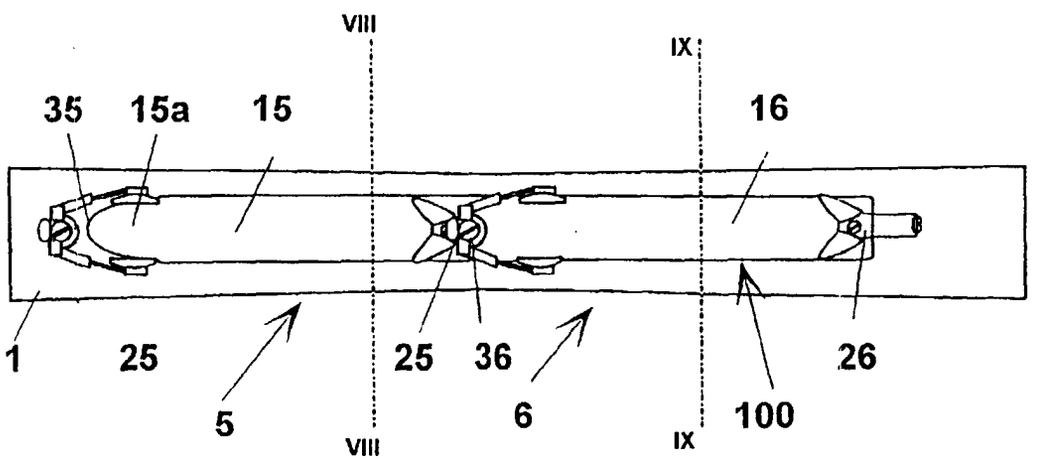

VIII
IX
35
15a
15
16
1
25
25
36
26
5
6
100
VIII
IX

Fig. 8

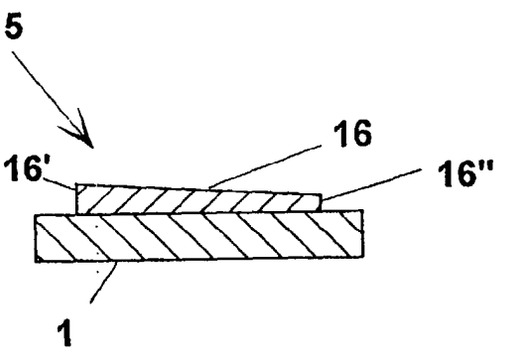


Fig. 9

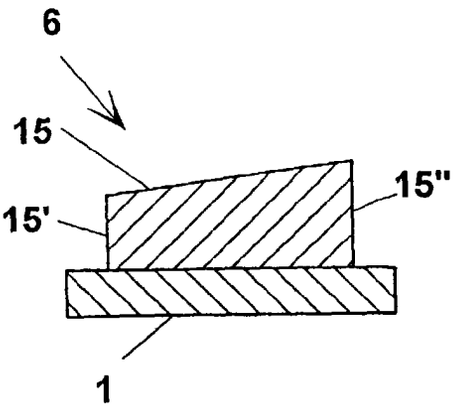
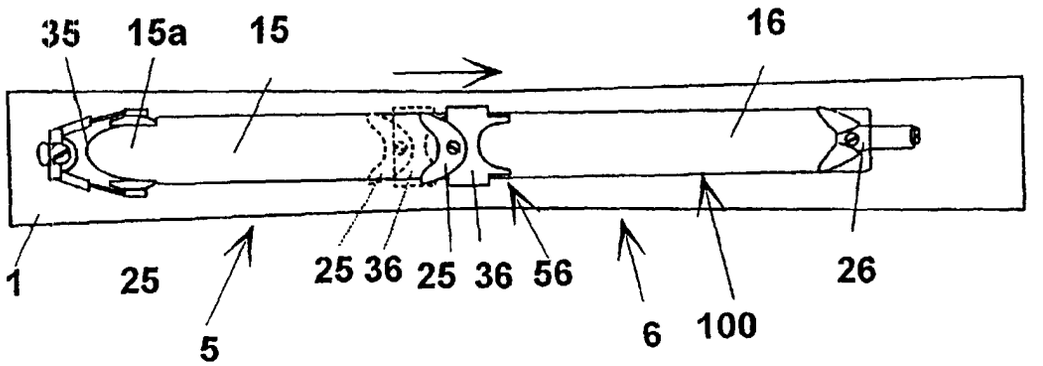


Fig.10



European Patent Office

EUROPEAN SEARCH REPORT

Application Number
EP 00 83 0025

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int.Cl.7)
X	FR 2 604 631 A (CLARK) 8 April 1988 (1988-04-08) * page 10, paragraph 3 - page 11, paragraph 4; figures 1,3,9 *	1-3	A63C5/03 A63C9/00
X	US 5 056 803 A (TEETER ET AL) 15 October 1991 (1991-10-15) * column 3, paragraph 5; figures 16-18 *	1,2,7	
X	DE 27 23 864 A (KITTMANN) 30 November 1978 (1978-11-30)	1,3,4,8	
A	* page 3, paragraph 4; figures 1-3,5 *	2,6	
A	US 3 900 204 A (WEBER) 19 August 1975 (1975-08-19) * column 4, paragraph 1; figures 4,6 *	1,2,6,8	

TECHNICAL FIELDS SEARCHED (Int.Cl.7)

A63C

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
THE HAGUE	27 June 2000	Steegman, R

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 00 83 0025

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.

27-06-2000

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
FR 2604631 A	08-04-1988	US 4867470 A	19-09-1989
		DE 3733104 A	21-04-1988
		IT 1218165 B	12-04-1990
		JP 2114892 C	06-12-1996
		JP 8004647 B	24-01-1996
		JP 63226379 A	21-09-1988
US 5056803 A	15-10-1991	US 5058910 A	22-10-1991
		US 5503414 A	02-04-1996
		US 5368320 A	29-11-1994
DE 2723864 A	30-11-1978	AT 367578 A	15-05-1979
		AT 367578 B	15-05-1979
US 3900204 A	19-08-1975	NONE	

EPO FORM P0459

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