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(72) Inventor: **Moroni, Giuseppe**

29027 Podenzano Piacenza (IT)

(74) Representative: **Crippa, Paolo Ernesto et al**

Jacobacci & Partners S.p.A.,

Piazzale Arnaldo, 2

25121 Brescia (IT)

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(71) Applicant: **Mantec Engineering S.r.l.**

29027 Podenzano (Piacenza) (IT)

(54) Equipment for reconditioning and sharpening ski blade edges

(57) This invention regards to an equipment for reconditioning and sharpening the blades (3) of skis (1) comprising a motor (4) which rotates a grinding wheel (5) with a sharpening insert (6) made of suitable mate-

rial, in which the grinding wheel (5) rotation axis A coincides with the motor (4) rotation axis R but can be shifted by a set α so that the grinding wheel (5) rotation plane is inclined with respect to the plane of the ski (1) by a set angle β .

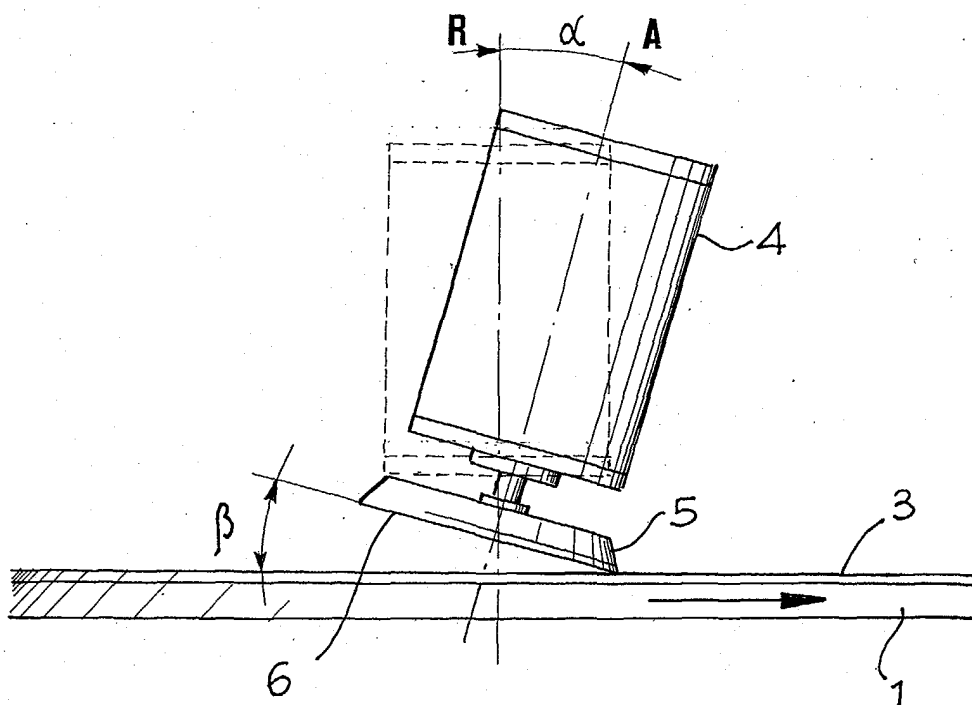


Fig. 5

Description

[0001] The subject of the invention is an equipment for reconditioning and sharpening the blades of skis and similar items such as snowboards.

State of the art

[0002] It is a well known fact that the sides of the sliding surface or bottom of skis, whether destined for cross country or downhill use, or snowboards, have inserts in the form of small bars, known as blades, which run along the entire length of the ski and grip the snow in the direction of travel, whether on steep slopes, during bends or controlled slides (dérapage).

[0003] The grip of the blades depends on their incision of the snow, due to the correct maintenance of their outer edge, which must be sharpened, especially - but not exclusively- when skiing on hard or icy snow.

[0004] Various sharpening equipments have already been presented which while on one hand have rationalised traditional hand sharpening, have also presented considerable limits in the sharpening of "shaped" ski blades, the outside edges of which run concave towards their centre near the ski fastenings.

[0005] Other inconveniences presented by existing equipment consist in the fact that the revolving grinding wheels usually used treat the blades in such a way as to create a sort of graduated step effect on the metal, reducing the slipperiness of the ski and its grip on the snow.

Aim and description of the invention.

[0006] The aim of this invention is to propose an equipment for sharpening ski blades which solves and eliminates the abovementioned limits and inconveniences.

[0007] These aims will be more obvious if reference is made to the enclosed drawings, which are purely indicative and in no way binding, in which:

[0008] Fig.1 shows an equipment under examination, for hand-operated use for sharpening the base of ski blades;

[0009] Fig.2 shows the equipment described in Fig.1 rotated by 90° for sharpening the side of ski blades;

[0010] Fig.3 shows an equipment for the simultaneous sharpening of the sides of both ski blades while the ski is moving;

[0011] Fig.4 shows the equipment for sharpening the ski blades, running under the ski which is still;

[0012] Figures 5 and 6 show a diagram of the working position of the sharpening grinding wheel with respect to the blades.

[0013] In this drawing, the number 1 is used to indicate a ski with one bottom 2 with blades 3 at either side. The equipment under examination is made up of a motor 4 which turns a grinding wheel 5 with a ring insert 6 made

of material suited to the treatment of the blade 3.

[0014] In the case indicated in Fig.1, the equipment is moved by hand in a single direction, common to the versions shown here, which starts from the tip of the ski 2' and moves towards its tail (not shown). In this case, the equipment has a first guide element 7 which rests against the bottom 2 and a second guide element 8 which makes contact with the lateral profile of the ski 1. Said element 8 is in a single piece with the body of the equipment and can be transversally adjusted using a screw 9 to obtain the correct position of the grinding wheel 5 against the ski blade 3.

[0015] The equipment shown in Fig.1 can also be rotated by 90° to sharpen the side of the blades 3 - Fig.2- and in this case element 8 performs the same action as an adjustable runner for the grinding wheel 5 with respect to the ski blade 3.

[0016] Fig.3 shows a pair of grinding wheels 5 powered by their respective motors 4 brought into contact with the ski blades 3 for sharpening them, with the ski moving in the direction of arrow M.

[0017] Fig.4 shows the version depicted in Fig. 3 but with the grinding wheels 5 in the position for sharpening the base of the blades 3. In this case the grinding wheels 5 and their motors 4 are connected by an insert 10' which enables movement along a runner 10 on the bottom 2 of the ski 1 powered by a motor (not illustrated). In this situation, the movement motor may be connected to a computer for the repetition of the sharpening action thanks to a memory which stores the position of the grinding wheels with respect to the ski.

[0018] As shown in Figures 3 and 4 (also valid for the versions shown in Figures 1 and 2), axis A of the grinding wheel 5 is aligned with axis R of the motor 4 but can be shifted by an angle α , so that the grinding wheel 5 and its insert 6 do not rest on a plane which is parallel to the ski blades 3 but are inclined by an angle β , allowing the grinding wheel to operate on the ski blades in such a way as to sharpen a single point of the ski blade progressively as the sharpening tool slides along the ski.

[0019] This way of operating, deriving from the fact that the grinding wheels 5 can be inclined by angles α and β , enables operation on the sides of the ski blades 3 so that they can be sharpened to create optimum angles of incision of the blades in the snow (see Figures 1 and 2), by adjusting the screw 9'. This inclination, known as "tuning" enables variation of the ski's lateral grip on the snow depending on varying requirements, especially (but not only) with regard to competitive skiing.

[0020] That described up to now solves the problem of the double passage on the ski blades of one grinding wheel which is on the same plane as the ski blades, whether the grinding wheel turns round a fixed axis or an oscillating axis.

[0021] In any case, the grinding wheel will turn in the opposite direction to that of, or with respect to, the ski so as to favour elimination of the material removed from

the ski blades during the sharpening operation towards the outside.

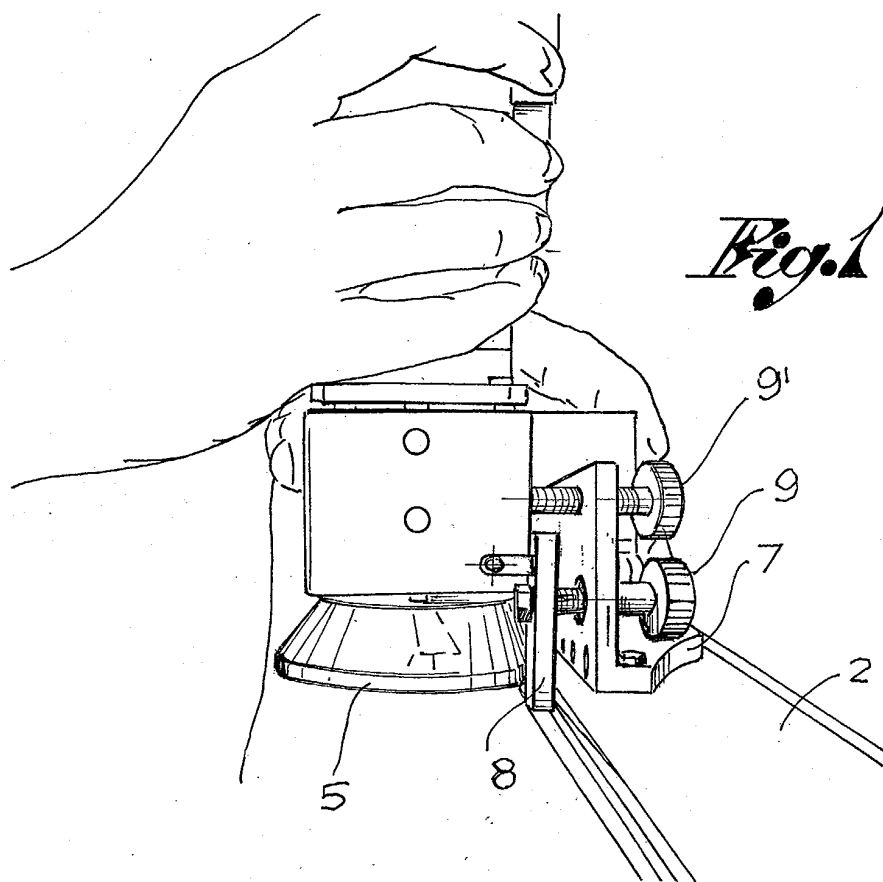
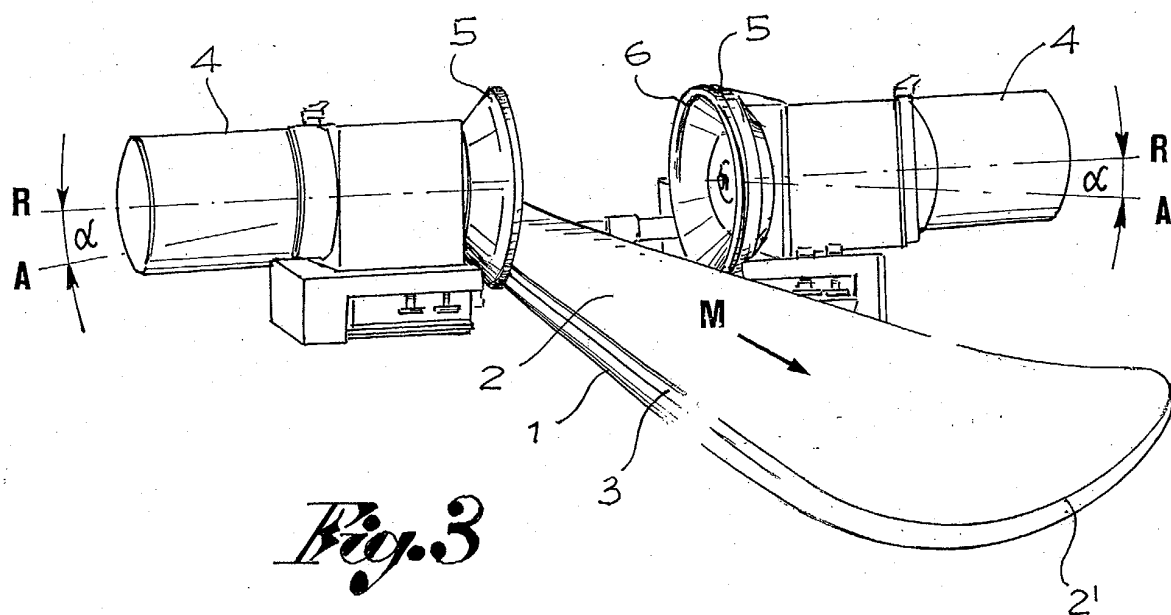
[0022] The solutions presented here, especially the positioning of the grinding wheels according to the angle shown in Figures 5 and 6, make it possible to treat both the blades on traditional skis and so-called "shaped" skis with the same efficiency.

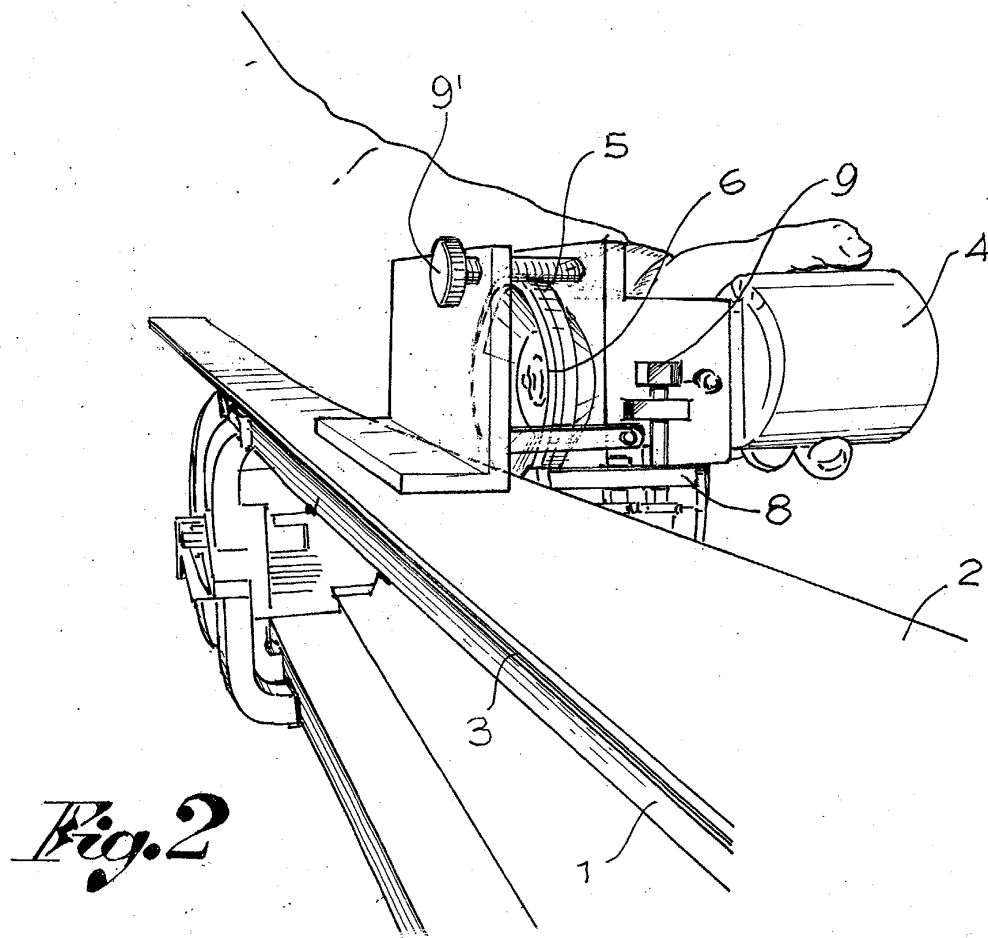
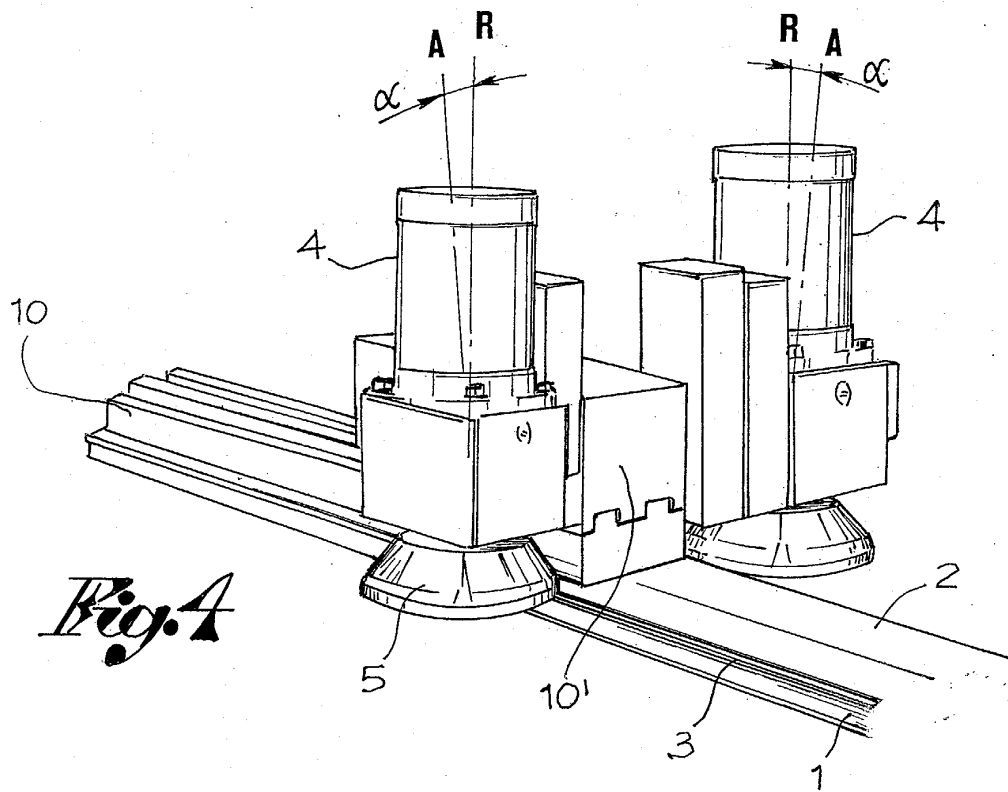
Claims

1. Equipment for reconditioning and sharpening the blades (3) of skis (1) comprising a motor (4) which rotates a grinding wheel (5) with a sharpening insert (6) made of suitable material, **characterised by** the fact that the grinding wheel (5) rotation axis A coincides with the motor (4) rotation axis R but can be shifted by a set angle α so that the grinding wheel (5) rotation plane is inclined with respect to the plane of the ski (1) by a set angle β .
2. Equipment as shown in claim 1, **characterised by** the fact that the grinding wheels (5) with their motors (4) can operate on the side of the ski blades (3) at set preferred inclinations by adjusting a screw (9') to change their angle of incision of the snow.
3. Equipment as shown in claims 1 and 2, **characterised by** the fact that the sharpening action performed on the ski blades (3) by the grinding wheel (5) is a blade sharpening action.
4. Equipment as shown in the previous claims **characterised by** the fact that the grinding wheel (5) turns in the opposite direction to the manual or motorised movement of the ski.
5. Equipment as shown in claim 1 **characterised by** the fact that it can be used manually and motorised with the ski still, or in the still position with the skis moving longitudinally.
6. Equipment as shown in the previous claims **characterised by** the fact that it can be turned by 90° to sharpen the ski blades (3) both on the bottom and side.

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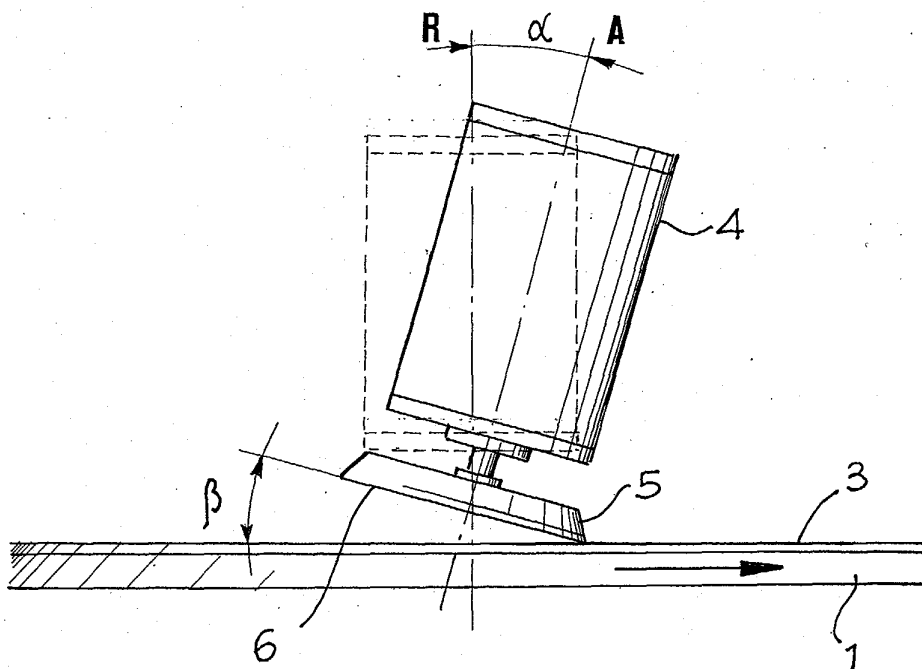


Fig. 5

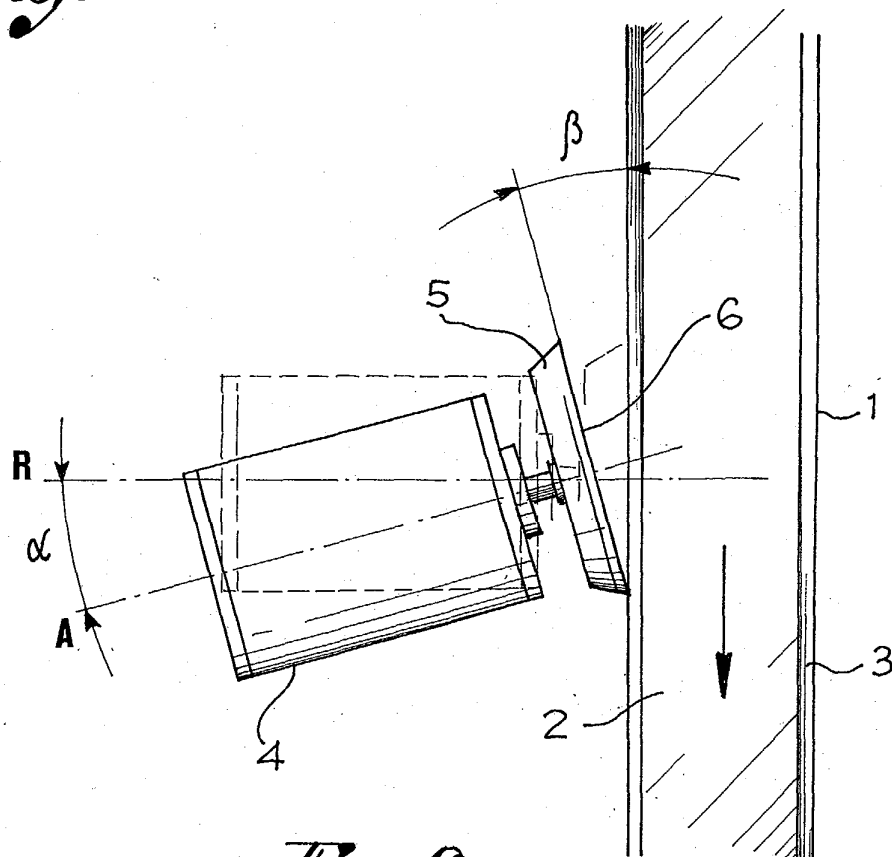


Fig. 6



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EUROPEAN SEARCH REPORT

Application Number
EP 04 42 5011

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	CH 661 876 A (HANS ROELLI) 31 August 1987 (1987-08-31) * column 1, line 62 - column 2, line 2 * * column 3, line 19 - column 4, line 26; figures *	1-6	A63C11/06
X	DE 39 14 977 A (HEINHAUS MATTHIAS) 8 November 1990 (1990-11-08) * column 2, line 59 - column 3, line 43 * * column 4, line 3 - line 19; claim 1; figures 1,2,5 *	1-3	
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A	WO 01/78852 A (REYNAUD SERGE ;REYNAUD MICHELLE (CH); SALOMON SA (FR)) 25 October 2001 (2001-10-25) * the whole document *	1	
A	FR 2 028 285 A (DEUTSCH FRIEDRICH) 9 October 1970 (1970-10-09) * the whole document *	1	TECHNICAL FIELDS SEARCHED (Int.Cl.7) A63C B24B
The present search report has been drawn up for all claims			
Place of search		Date of completion of the search	Examiner
MUNICH		27 April 2004	Lundblad, H
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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EP 04 42 5011

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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27-04-2004

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