



Europäisches Patentamt
 European Patent Office
 Office européen des brevets



(11) **EP 1 310 181 A1**

(12) **EUROPEAN PATENT APPLICATION**

(43) Date of publication:
14.05.2003 Bulletin 2003/20

(51) Int Cl.7: **A43B 5/04, A43B 17/08,
 A43B 17/10**

(21) Application number: **02020858.3**

(22) Date of filing: **18.09.2002**

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

(72) Inventors:
 • **Baggio, Giorgio**
35018 S.Martino di Lupari (Padova) (IT)
 • **Trevisi, Franco**
31031 Caerano San Marco (Treviso) (IT)

(30) Priority: **12.11.2001 IT MI20012380**

(74) Representative: **Forattini, Amelia**
c/o Internazionale Brevetti
Ingg. ZINI, MARANESI & C. S.r.l.
Piazza Castello 1
20121 Milano (IT)

(71) Applicant: **HTM SPORT S.p.A.**
16035 Rapallo (Genova) (IT)

(54) **Sports shoe**

(57) A sports shoe having an inner shoe made of fabric that has a first hydrophobic side (8), arranged in contact with the user's foot. The fabric has a second absorbent hydrophilic side (9), connected to one or more channels (11). The channels have at least one opening (15) in the region adjacent to the upper perimetric edge of the inner shoe.

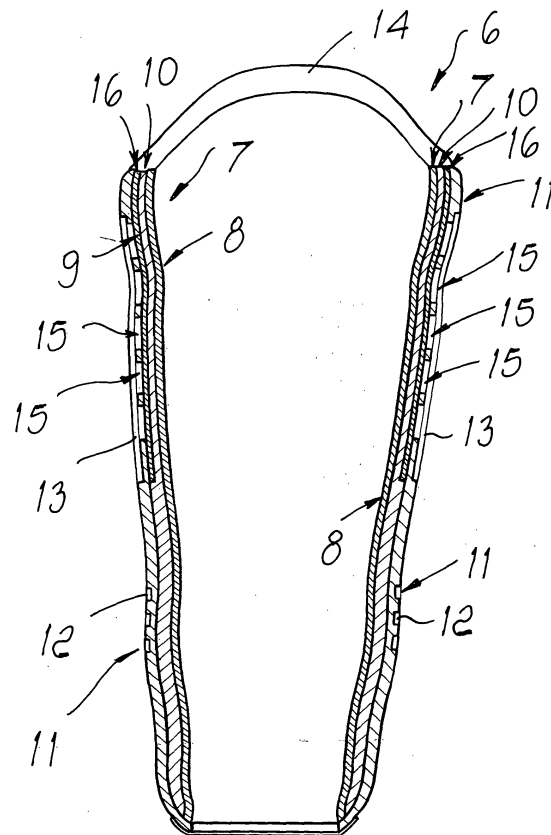


Fig. 3

EP 1 310 181 A1

Description

[0001] The present invention relates to a sports shoe of the type composed of at least one quarter articulated to a shell, such as, for example, a ski boot, an ice boot, or a roller skate or ice skate.

[0002] Currently, the shells and quarters of those sports shoes are usually made of plastics or other materials that do not allow transpiration, and the problem is strongly felt of achieving good ventilation of the foot in order to avoid the undesirable effects of the intense perspiration that affects the foot during sports practice.

[0003] The foot is in fact seated within a soft inner shoe that is essentially used to increase the comfort of the foot. The inner shoe, in addition to allowing soft resting for the foot, is also adapted to retain heat inside it, so as to maintain an adequate temperature for the foot during the sports practice.

[0004] However, the heat also causes the foot to perspire, even excessively.

[0005] As a partial solution to those drawbacks, there are roller skates having a shell provided with holes; during skating, the flow of air strikes the shell and, at the holes, also the underlying surface of the inner shoe, so as to allow better heat dissipation.

[0006] However, that solution is insufficient, and the problem of perspiration persists.

[0007] Moreover, that solution cannot be applied directly to ski boots or ice boots, because snow or ice would accumulate at the holes formed in the surface of the shell, lowering the temperature of the inner shoe and possibly allowing the penetration of water.

[0008] The aim of the present invention is to solve the above described problems, by providing a sports shoe, such as a ski boot, an ice boot or a skate, that allows to achieve optimum ventilation of the foot during sports practice.

[0009] Another object is to provide a sports shoe that combines optimum ventilation with optimum comfort for the user's foot.

[0010] Another object is to provide a ventilated sports shoe that has low manufacturing costs.

[0011] This aim, these objects and others that will become better apparent from the description that follows are achieved by a sports shoe as claimed in the appended claims.

[0012] Other objects will become better apparent in the description that follows, which must be considered together with the accompanying drawings, which illustrate merely by way of non-limitative example a particular embodiment, wherein:

Figure 1 is a side view of a ski boot;

Figure 2 is a side view of the inner shoe;

Figure 3 is a sectional view of the inner shoe, taken along the line III-III of Figure 2.

[0013] With reference to the above cited figures, and

bearing in mind that they are examples of a particular embodiment and are in variable scale and in that individual reference numerals designate therein identical or equivalent parts, the reference numeral 1 designates a sports shoe such as a ski boot.

[0014] The ski boot is constituted by a shell 2 made of plastics to which a quarter 4 is articulated by means of studs 3.

[0015] Closure levers 5 are provided at the quarter 4 and at the shell 2.

[0016] Inside the shell and the quarter there is an inner shoe 6, which is provided internally with a two-part fabric 7 formed by a fiber of material, known by the trade-name Nylon, which is hydrophobic and woven to form two sides: a first side 8 is composed of a hydrophobic fiber which makes contact with the user's foot.

[0017] There is a second side 9, which is directed toward the outside of the inner shoe 6 and is composed of absorbent hydrophilic Nylon.

[0018] A padding 10 is associated and in contact with the second side 9 of the fabric 7 and is preferably constituted by a terry.

[0019] A plurality of channels 11 are associated with the outside of the padding 10 and are shaped like a letter L, in which a shorter arm 12 is arranged preferably laterally to the user's foot in a region that is adjacent to the malleolar region and/or lies above it.

[0020] Each channel 11 also has a longer arm 13 that reaches toward an upper perimetric edge 14 of the inner shoe 6, preferably with an arc-like shape.

[0021] A plurality of openings 15 are provided externally at the longer arm 13 and are therefore connected to the outside.

[0022] At the longer arm 13 of each channel 11 there is a layer of a transpiring material 16 that is interposed with respect to the padding 10 and can optionally affect the entire surface of the inner shoe 6 in the region that lies above the malleolar region.

[0023] The sports shoe thus provided therefore has an inner shoe that can be put on by the user and the inner part of which remains drier, because the moisture generated inside the inner shoe in contact with the foot is removed and drawn toward the second side 9 at the channels 11.

[0024] The inner part of the inner shoe is therefore drier, because the second side 9 of the fabric 7 widens the moist area, facilitating its rapid evaporation through the channels 11 and therefore through the venting openings 15 formed in the channels 11.

[0025] The motion of the foot while flexing the leg is substantially a back-and-forth movement and entails a compression and subsequent expansion of the transpiring padding 10, thus producing a pump effect that facilitates the expulsion of the moisture through the channels and the openings.

[0026] It has been found that the shoe thus provided has achieved the intended aim and objects, allowing the perspiration generated inside the inner shoe during

sports practice to flow from the inside outwards.

[0027] The number of channels, as well as their arrangement and their possible interconnection or lack thereof, may of course be the most pertinent according to specific requirements.

[0028] The openings 15 can be of the type that can be throttled fully or partially by using suitable sliders and/or plugs that can be activated by the user.

[0029] The materials and the shape and dimensions of the individual components of the sports shoe may of course be the most pertinent and disparate according to specific requirements.

Claims

1. A sports shoe, **characterized in that** it comprises an inner shoe made of fabric that has a first hydrophobic side, arranged in contact with the user's foot, and a second absorbent hydrophilic side, connected to one or more channels that have at least one opening in the region adjacent to the upper perimetric edge of said inner shoe. 5
2. The sports shoe according to claim 1, **characterized in that** said inner shoe is internally provided with a two-part fabric. 10
3. The sports shoe according to claim 1, **characterized in that** said inner shoe is provided internally with a fabric formed by a fiber made of hydrophobic material coupled to absorbent hydrophilic material. 15
4. The sports shoe according to claim 3, **characterized in that** said fabric has a first side composed of a hydrophobic fiber, which makes contact with the user's foot. 20
5. The sports shoe according to claim 4, **characterized in that** said fabric has a second side that is directed toward the outside of said inner shoe and is composed of an absorbent hydrophilic fiber. 25
6. The sports shoe according to one or more of the preceding claims, **characterized in that** a padding, constituted by a terry, is associated and in contact with said second side of said fabric. 30
7. The sports shoe according to claim 6, **characterized in that** a plurality of channels are provided outside said padding. 35
8. The sports shoe according to claim 7, **characterized in that** said channels are shaped like a letter L, in which the shorter arm is arranged laterally to the foot of the user in a region that is adjacent to the malleolar region. 40
9. The sports shoe according to claim 8, **characterized in that** one or more of said channels have a longer arm that reaches toward the upper perimetric edge of said inner shoe, with an arc-like shape. 45
10. The sports shoe according to claim 9, **characterized in that** a plurality of openings are formed externally at said longer arm and are connected to the outside. 50
11. The sports shoe according to claim 10, **characterized in that** a layer of transpiring material is interposed, with respect to said padding, at said longer arm of one or more of said channels. 55
12. The sports shoe according to claim 11, **characterized in that** said layer of transpiring material affects the entire surface of said inner shoe in the region above the malleolar region.
13. The sports shoe according to one or more of the preceding claims, **characterized in that** said fabric and said channels allow to keep the inner part of said inner shoe dry, because the moisture produced inside said inner shoe in contact with the foot is removed and drawn toward said second side at said channels, said second side expanding the moist region, facilitating its rapid evaporation through said channels and through said venting openings.
14. The sports shoe according to one or more of the preceding claims, **characterized in that** the motion of the foot during flexing, which is substantially a back-and-forth movement, entails a compression and a subsequent expansion of said transpiring padding, producing a pump effect that facilitates the expulsion of said moisture through said channels and openings.

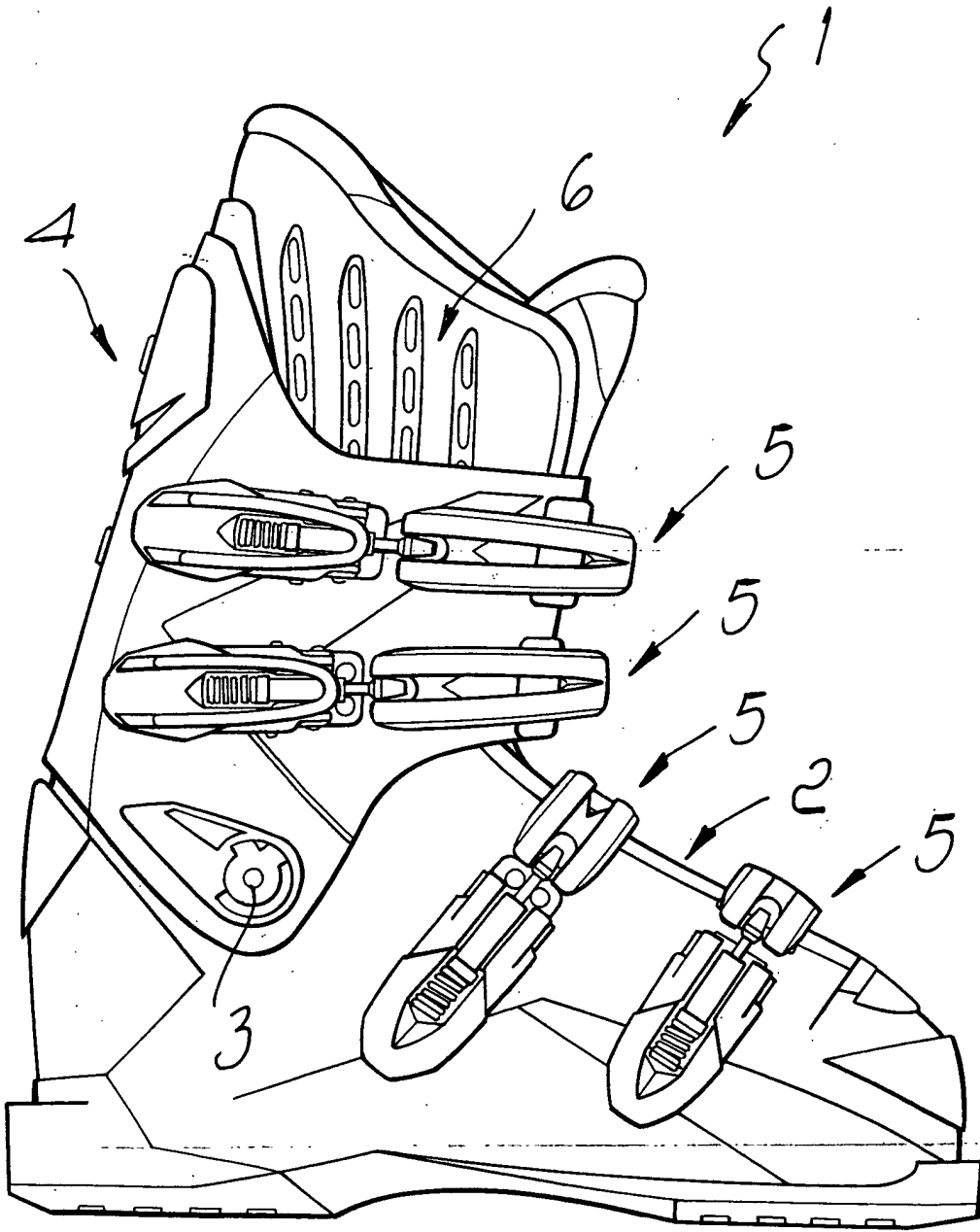


FIG. 1

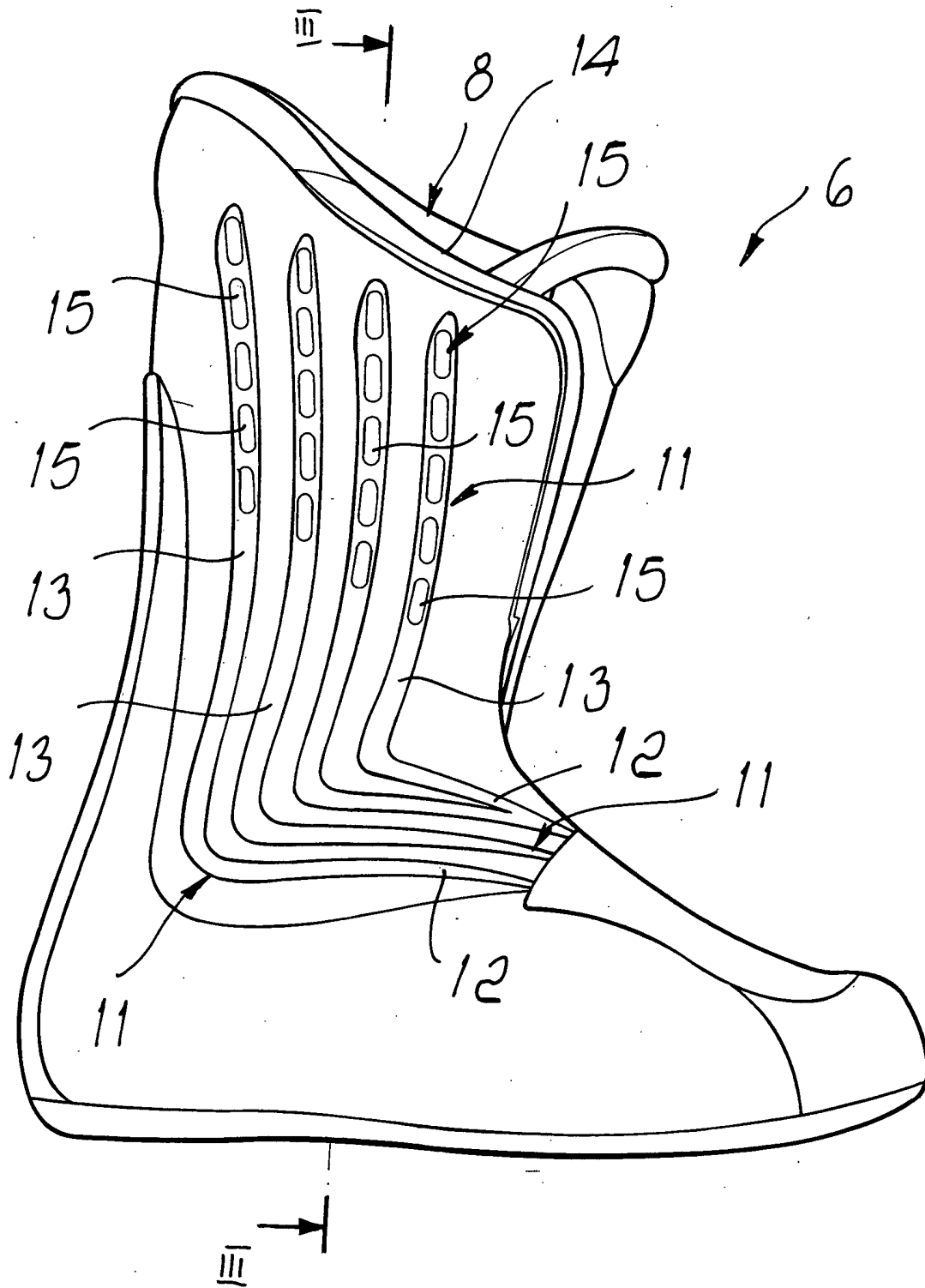


Fig. 2

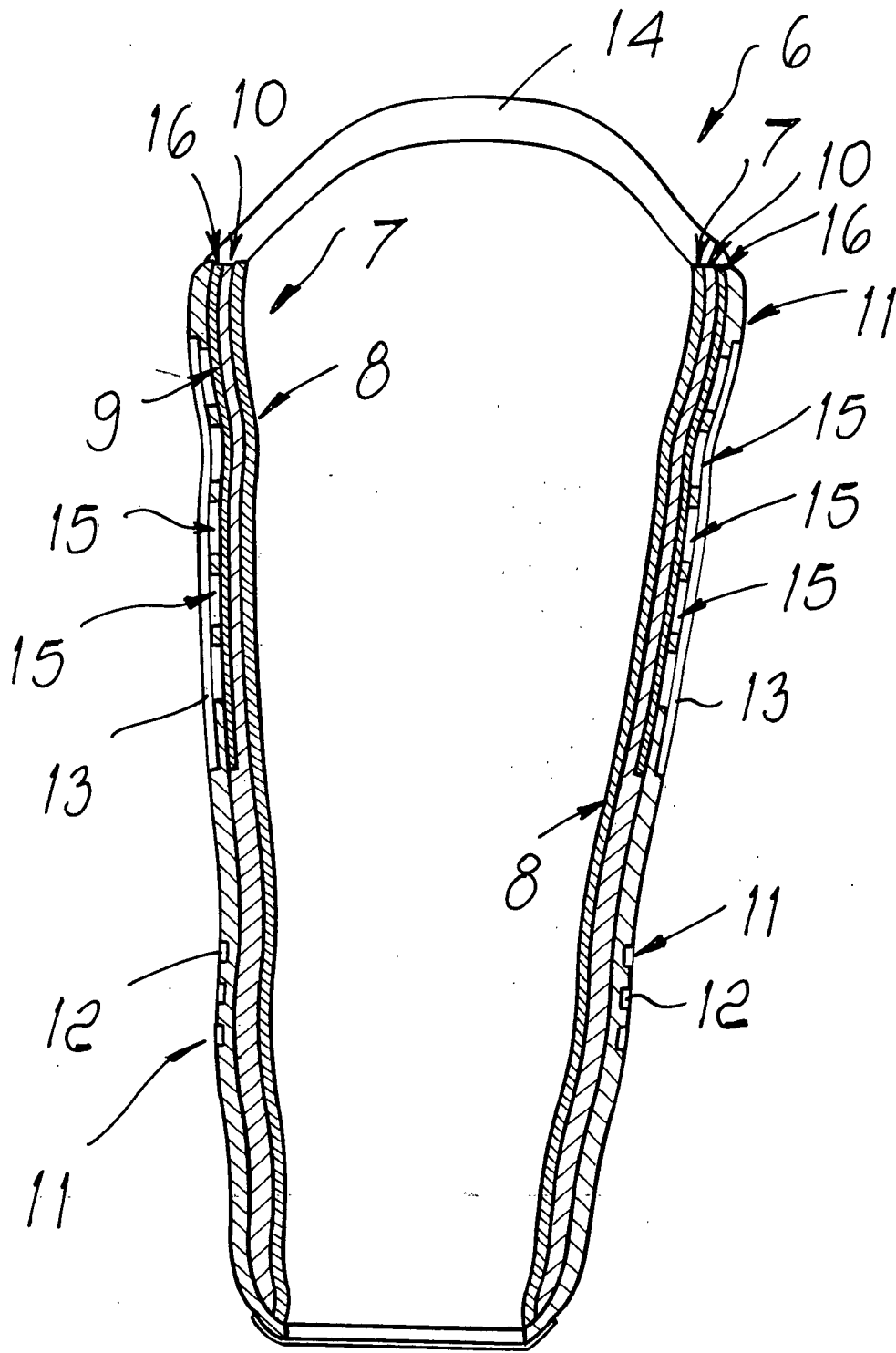


Fig. 3



DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int.CI.7)
Y	FR 2 738 999 A (SIDAS SA) 28 March 1997 (1997-03-28) * page 4, line 30 - page 5, line 15; figures 1,2 *	1-7	A43B5/04 A43B17/08 A43B17/10
Y	US 5 511 323 A (DAHLGREN RAY E) 30 April 1996 (1996-04-30) * column 4, line 22 - line 58; figures 4-7 *	1-7	
Y	EP 0 800 777 A (NORDICA SPA) 15 October 1997 (1997-10-15) * column 3, line 2 - column 4, line 11; figures 1-4 *	1-7	
Y	WO 97 37624 A (ROSSI FRANCESCA ;GAME INT SA (PA)) 16 October 1997 (1997-10-16) * page 2, line 27 - page 4, line 4 *	1-7	
A	EP 0 793 921 A (NORDICA SPA) 10 September 1997 (1997-09-10) * column 3, line 6 - line 32; figures 1-5 *	1	TECHNICAL FIELDS SEARCHED (Int.CI.7) A43B
P,A	PATENT ABSTRACTS OF JAPAN vol. 2002, no. 07, 3 July 2002 (2002-07-03) & JP 2002 085103 A (KITABAYASHI YASUO), 26 March 2002 (2002-03-26) * abstract *	1	
The present search report has been drawn up for all claims			
Place of search THE HAGUE		Date of completion of the search 4 March 2003	Examiner Cianci, S
CATEGORY OF CITED DOCUMENTS		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	
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			

EPO FORM 1503 03/82 (P04C01)

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

EP 02 02 0858

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.

04-03-2003

Patent document cited in search report		Publication date	Patent family member(s)	Publication date
FR 2738999	A	28-03-1997	FR 2738999 A1	28-03-1997
US 5511323	A	30-04-1996	US 5365677 A	22-11-1994
			AU 4533593 A	24-01-1994
			DE 69305079 D1	31-10-1996
			DE 69305079 T2	15-05-1997
			EP 0649286 A1	26-04-1995
			ES 2096932 T3	16-03-1997
			WO 9400033 A1	06-01-1994
EP 0800777	A	15-10-1997	IT TV960049 A1	13-10-1997
			EP 0800777 A2	15-10-1997
			US 6012236 A	11-01-2000
WO 9737624	A	16-10-1997	IT M0960044 A1	06-10-1997
			AU 2306597 A	29-10-1997
			WO 9737624 A1	16-10-1997
EP 0793921	A	10-09-1997	IT TV960030 A1	05-09-1997
			EP 0793921 A2	10-09-1997
JP 2002085103	A	26-03-2002	NONE	