

(19)



(11)

EP 2 036 594 A1

(12)

EUROPEAN PATENT APPLICATION

(43) Date of publication:

18.03.2009 Bulletin 2009/12

(51) Int Cl.:

A63B 49/04 (2006.01)

A63B 59/00 (2006.01)

(21) Application number: **07017919.7**

(22) Date of filing: **12.09.2007**

(84) Designated Contracting States:

**AT BE BG CH CY CZ DE DK EE ES FI FR GB GR
HU IE IS IT LI LT LU LV MC MT NL PL PT RO SE
SI SK TR**

Designated Extension States:

AL BA HR MK RS

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(54) **Multifunction racket**

(57) A multifunction racket (10, 50) in which the head frame (20, 52) has multiple elongated slots (22, 54) and ribs (24) positioned in each elongated slot (22, 54) such that the user can selectively insert shock absorbing members (40, 56) of different weights and shock absorbing

characteristics into the elongated slots (22, 54) of the head frame (20, 52) to adjust the location of the gravity center and shock absorbing characteristic of the racket (10, 50).

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Description

BACKGROUND OF THE INVENTION

1. Field of the Invention

[0001] The present invention relates to sports products and more particularly, to a multifunction racket that reduces air resistance, and allows shifting of the gravity center and changing the shock absorbing characteristic.

2. Description of the Related Art

[0002] A conventional racket, for example, tennis racket, badminton racket or squash racket, has fixed characteristics of weight, location of gravity center, string tension, and shock absorbing effect. The user may select a racket with specific characteristics according to one's preferences. A player needs to carry many rackets having different characteristics for selection subject to the environmental conditions or personal physical conditions when going to a court to play tennis, badminton, or squash. It is inconvenient and not economical to carry many rackets when going to play tennis, badminton, or squash.

SUMMARY OF THE INVENTION

[0003] The present invention has been accomplished under the circumstances in view. It is one object of the present invention to provide a multifunction racket, which allows adjustment of racket characteristics.

[0004] It is another object of the present invention to provide a multifunction racket, which is convenient for carrying by user and is economical therefore.

[0005] It is still another object of the present invention to provide a multifunction racket, which reduces air resistance, and allows shifting of the gravity center and changing the shock absorbing characteristic.

[0006] To achieve this and other objects of the present invention, the multifunction racket comprises a head frame located at a main imaginary plane and having at least one elongated slot and at least one rib positioned in the elongated slot. The elongated slot extends substantially in a direction perpendicular to the main imaginary plane. By means of the aforesaid arrangement, the air resistance of the racket of the present invention can be lowered when the user swings the racket to hit a ball.

[0007] According to another aspect of the present invention, the multifunction racket further comprises at least one shock absorbing member received in the elongated slot of the head frame to shift the gravity center of the racket and to change the shock absorbing characteristic of the racket.

BRIEF DESCRIPTION OF THE DRAWINGS

[0008]

FIG 1 is a front view of a multifunction racket in accordance with a first embodiment of the present invention.

FIG 2 is a sectional view of a part of the multifunction racket in accordance with the first embodiment of the present invention.

FIG. 3 is a front view of a part of the head frame of the multifunction racket in accordance with the first embodiment of the present invention.

FIG 4 is a perspective view of a shock absorbing member for the multifunction racket in accordance with the first embodiment of the present invention.

FIG 5 is a sectional view taken along line 5-5 of FIG. 2.

FIG 6 is a sectional view taken along line 6-6 of FIG 2.

FIG 7 is a front view of a multifunction racket in accordance with a second embodiment of the present invention.

DETAILED DESCRIPTION OF THE INVENTION

[0009] Referring to FIGS. 1-3, a multifunction racket 10 in accordance with the first embodiment of the present invention is shown comprising a head frame 20, a throat 30 extending from one side of the head frame 20, a handle 32 connected to the distal end of the throat 30, and four shock absorbing members 40. According to this embodiment, the multifunction racket 10 is a tennis racket.

[0010] The head frame 20 has two elongated slots 22, and eight ribs 24 symmetrically positioned in the elongated slots 22. The head frame 20 is located at a main imaginary plane P. The elongated slots 22 extend in a direction X as shown in FIG 5, which is perpendicular to the main imaginary plane P. The head frame 20 has a plurality of string holes 26 through which a string 28 passes and the string interweaves to form a network 29 for hitting a ball. The string holes 26 are disposed at two sides relative to the ribs 24 inside the elongated slots 22.

[0011] Referring to FIGS. 4-6, the shock absorbing members 40 each have a head 42 stopped against an outer periphery of the head frame 20, and a body 44 extending from the head 42 and positioned in the elongated slot 22 of the head frame 20. The body 44 has four first notches 45 for receiving the four ribs 24 in the elongated slot 22, and eight second notches 46 through which the string 28 passes. During installation, two shock absorbing members 40 are inserted into one elongated slot 22 from two opposite sides such that a distal end 48 of each of the bodies 44 of the two shock absorbing members 40 is abutted against each other and then bonded together. In other words, the two distal ends 48 of the two shock absorbing members 40 are bonded together. After installation, the heads 42 of the two shock absorbing members 40 are respectively stopped against two opposite sides of the elongated slot 22 of the head frame 20 such that the two shock absorbing members 40 and the head frame 20 are connected together.

[0012] The shock absorbing members 40 are made of

elastic rubber or plastics, such as thermoplastic rubber, polyurethane, polyether block amides, etc., to absorb shocks from the head frame **20** when striking a ball. Different shock absorbing members **40** with specific characteristics, such as weights and shock absorbing ability, may be prepared and selectively installed in the head frame **20** to adjust the gravity center and shock absorbing characteristic of the multifunction racket **10** to achieve different ball-hitting effect.

[0013] Further, the shock absorbing members **40** may be removed from the head frame **20**. Because the extending direction **X** of the elongated slots **22** is approximately perpendicular to the main imaginary plane **P** (i.e., the network **29**) and about in parallel to the ball-hitting direction, air can pass through the head frame **20** via the elongated slots **22** when the user swings the multifunction racket **10** such that the air resistance of the racket can be greatly reduced. The existence of the elongated slots **22** lowers the structural strength of the head frame **20**. However, the ribs **24** are respectively disposed between two string holes **26** such that the structural strength of the head frame **20** can be reinforced.

[0014] In other words, the multifunction racket **10** of the present invention allows the user to install different specifications of shock absorbing members **40** in the head frame **20** to shift the gravity center of the multifunction racket **10** and/or to change the shock absorbing characteristic of the multifunction racket **10**. The user can also remove the shock absorbing members **40** from the head frame **20** to reduce the weight of the multifunction racket **10** and air resistance. The user needs not to carry many rackets since the characteristics of the multifunction racket **10** can be adjusted easily. It's convenient for the user to carry only one multifunction racket **10** instead of several single function rackets and it's also economical for the user.

[0015] Based on the spirit of the present invention, the multifunction racket may be variously embodied. FIG. 7 shows a multifunction racket **50** in accordance with the second embodiment of the present invention. According to this embodiment, the multifunction racket **50** is a squash racket. The head frame **52** of the multifunction racket **50** has three elongated slots **54** respectively disposed at the top side, left side, and right side. Each elongated slot **54** allows installation of two shock absorbing members **56**. This second embodiment achieves more characteristic variation than the aforesaid first embodiment.

[0016] Although particular embodiments of the invention have been described in detail for purposes of illustration, various modifications and enhancements may be made without departing from the spirit and scope of the invention. For example, the head frame can be made having only one elongated slot for the installation of at least one shock absorbing member. The number and the location of the elongated slots may be changed. The number and shape of ribs in each elongated slot of the head frame may also be changed. The shock absorbing

members may be inserted tightly into the elongated slot (s) such that the shock absorbing members can be connected with the head frame. The number and location of the first notches and second notches of the shock absorbing members may be changed. Accordingly, the invention is not to be limited except as by the appended claims.

10 Claims

1. A multifunction racket (10, 50), comprising:

a head frame (20, 52) located at a main imaginary plane (P) and having at least one elongated slot (22, 54) and at least one rib (24) positioned in said at least one elongated slot (22, 54); wherein said elongated slot (22, 54) extends substantially in a direction perpendicular to said main imaginary plane (P).

2. The multifunction racket (10, 50) as claimed in claim 1, further comprising at least one shock absorbing member (40, 56) received in said at least one elongated slot (22, 54) of said head frame (20, 52).

3. The multifunction racket (10, 50) as claimed in claim 2, wherein said at least one shock absorbing member (40, 56) comprises at least one first notch (45) for receiving the at least one rib (24) of said head frame (20, 52).

4. The multifunction racket (10, 50) as claimed in claim 2, wherein said head frame (20, 52) is provided with a plurality of string holes (26) through which a string (28) passes and said at least one shock absorbing member (40, 56) comprises at least one second notch (46) through which said string (28) passes.

5. The multifunction racket (10, 50) as claimed in claim 2, wherein said at least one shock absorbing member (40, 56) comprises a head (42) stopped against an outer periphery of said head frame (20, 52), and a body (44) extending from said head (42) and positioned in said elongated slot (22, 54) of said head frame (20, 52).

6. The multifunction racket (10, 50) as claimed in claim 2, which comprises two said shock absorbing members (40, 56) respectively inserted into said elongated slot (22, 54) from two opposite sides of said elongated slot (22, 54) and each provided with an distal end (48); the two distal ends (48) of said two shock absorbing members (40, 56) are bonded together.

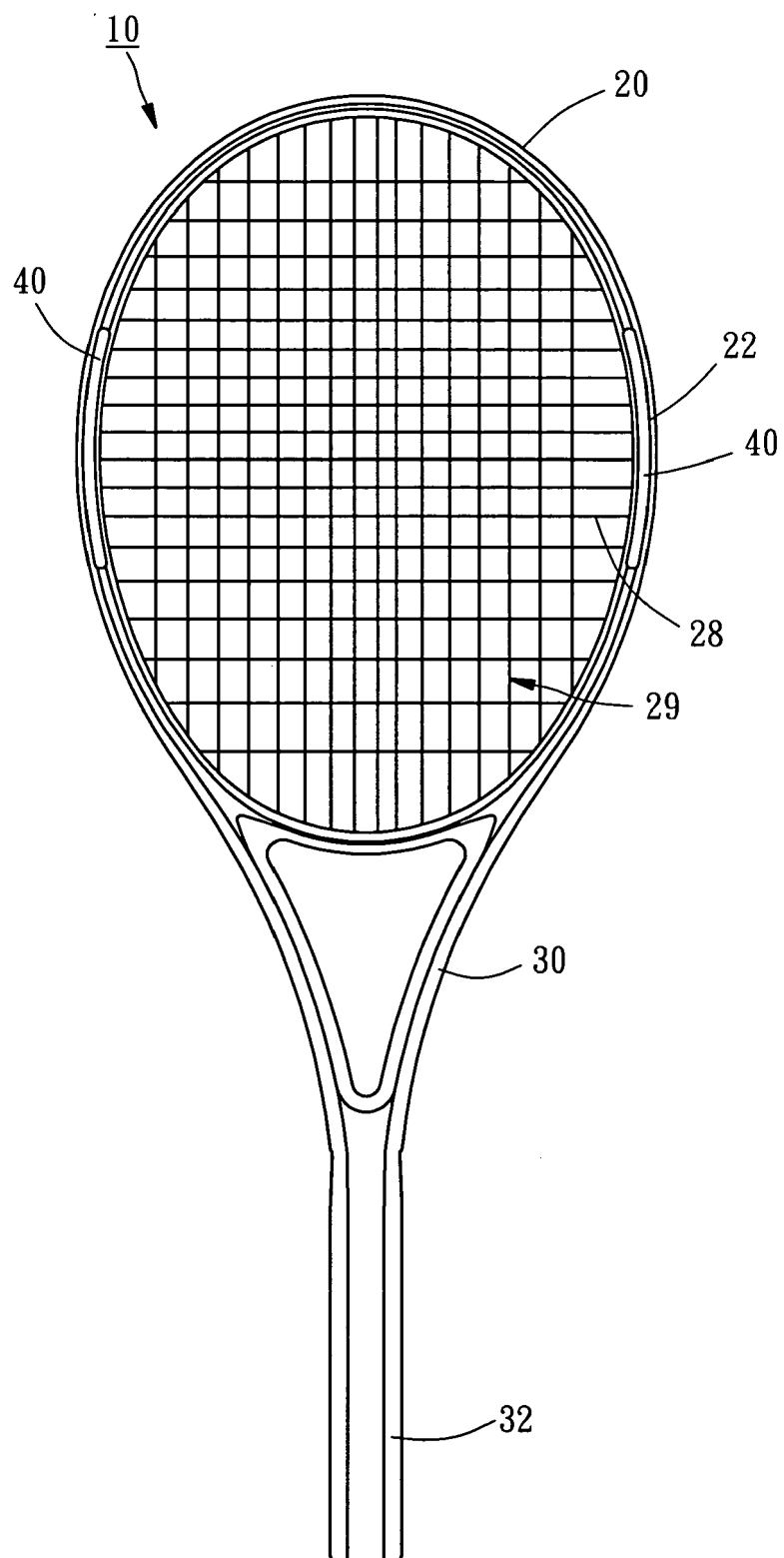


FIG. 1

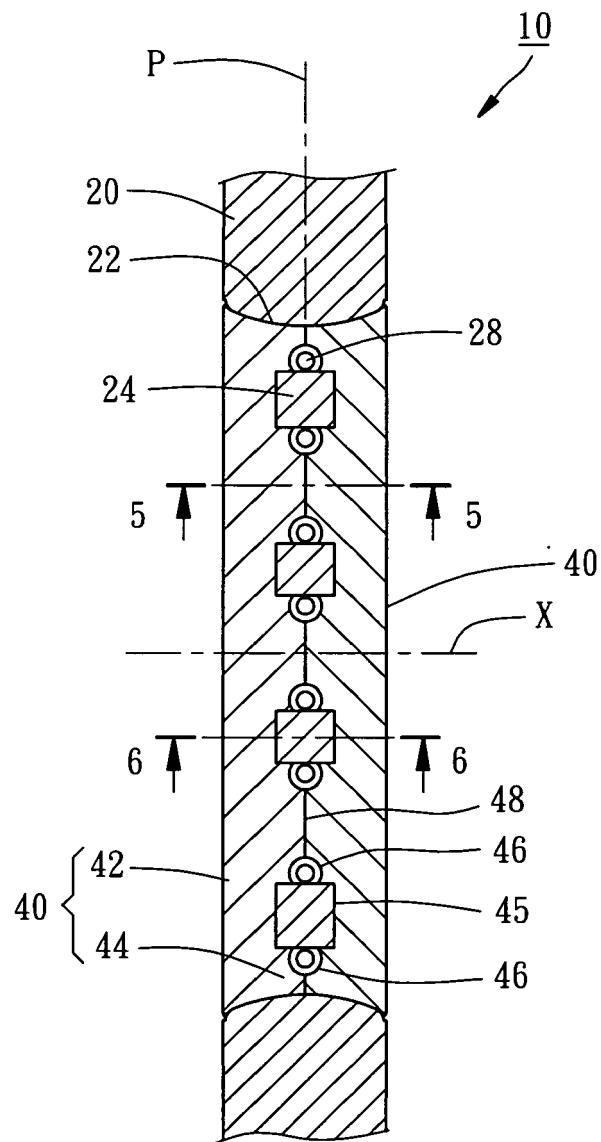


FIG. 2

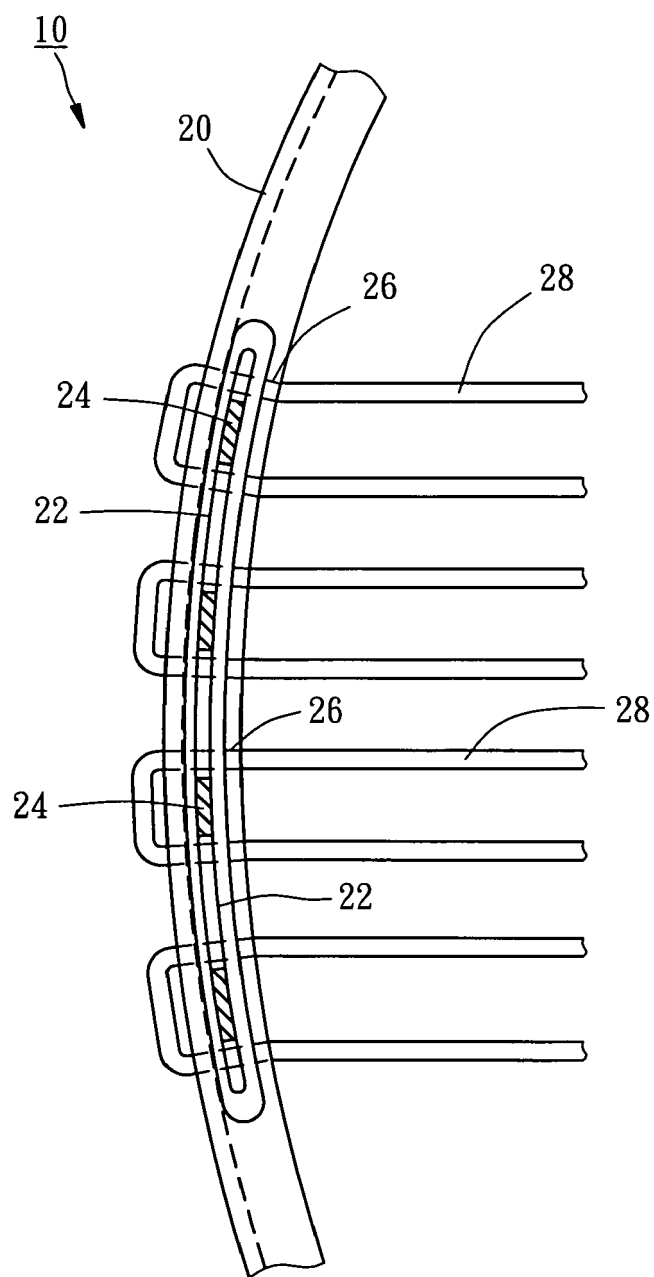


FIG. 3

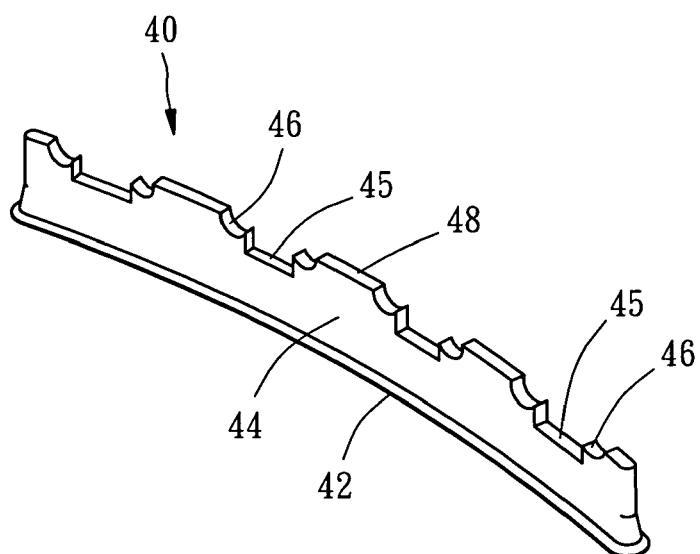


FIG. 4

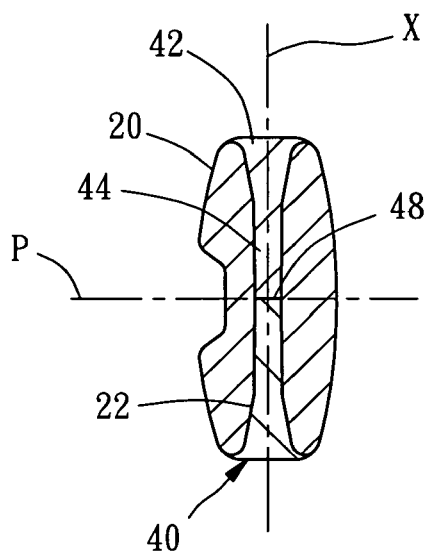


FIG. 5

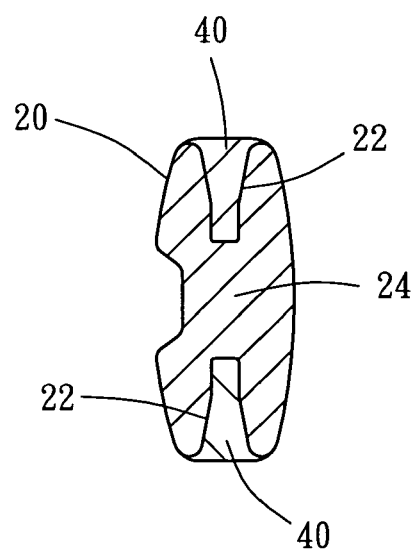


FIG. 6

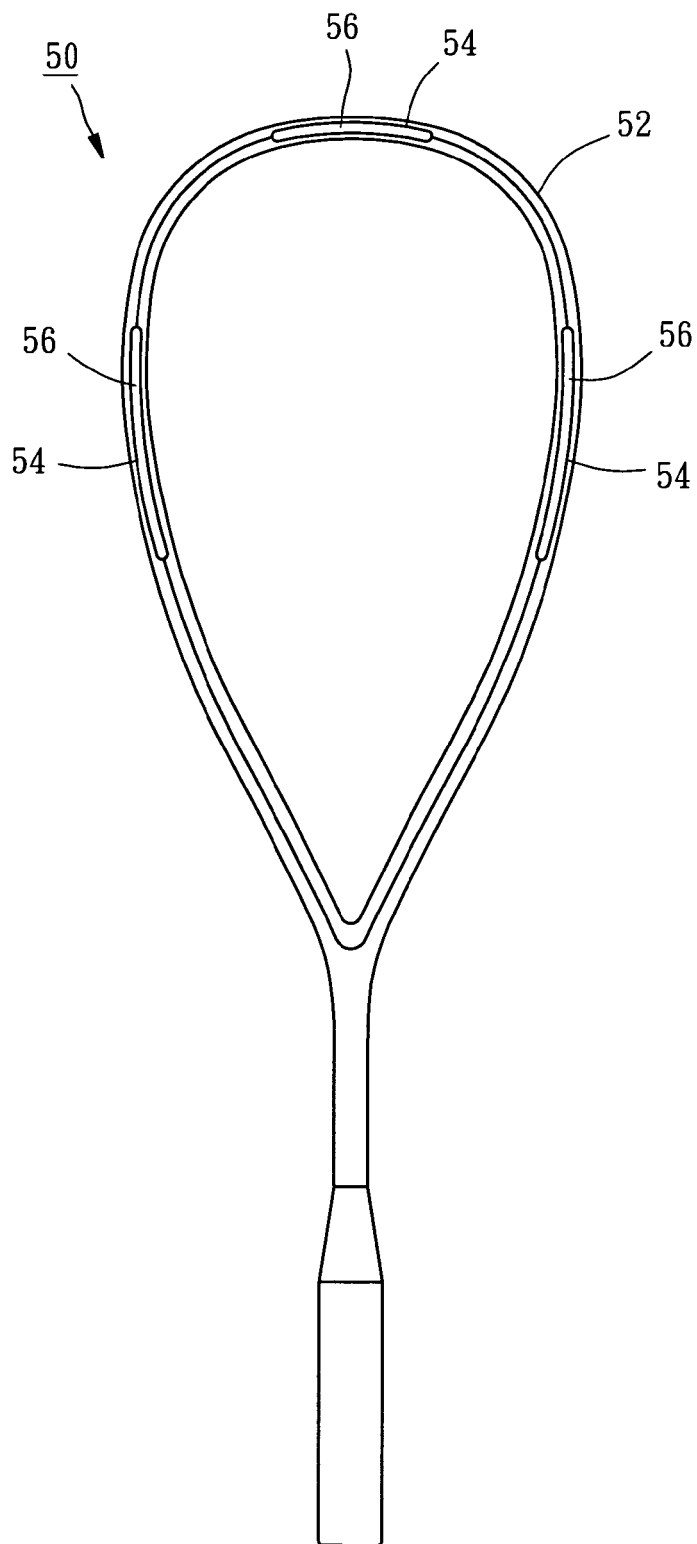


FIG. 7



European Patent
Office

EUROPEAN SEARCH REPORT

Application Number
EP 07 01 7919

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Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
X	WO 81/00214 A (BATTELLE DEVELOPMENT CORP [US]) 5 February 1981 (1981-02-05) * page 3, lines 10-16,25-35 * * page 14, lines 1,2,13 * * figures 4,5 *	1-3,5,6	INV. A63B49/04 A63B59/00
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			TECHNICAL FIELDS SEARCHED (IPC)
			A63B
The present search report has been drawn up for all claims			
Place of search The Hague		Date of completion of the search 6 February 2008	Examiner Tejada Biarge, Diego
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 07 01 7919

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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06-02-2008

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