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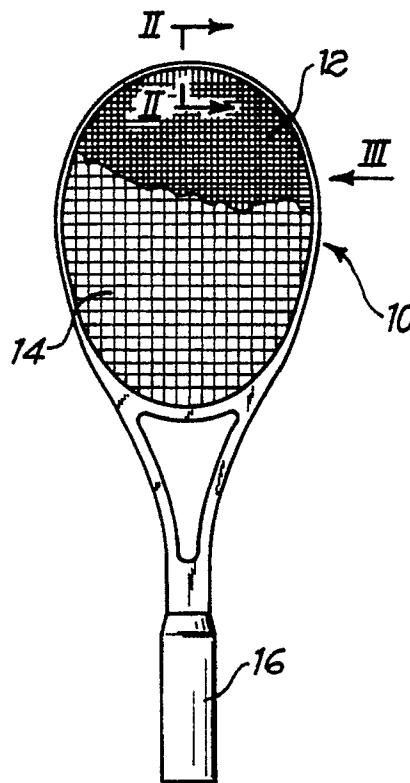
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**I-20123 Milano(IT)**(54) **Tennis racket with two differently tensioned stringings.**

(57) A tennis racket (10) comprises two distinct stringings (12,14) stretched within a single oval frame (10). The stringings are differently tensioned to vary the properties of each striking surface.

***Fig.1*****EP 0 421 950 A1**

## TENNIS RACKET WITH TWO DIFFERENTLY TENSIONED STRINGINGS

The object of the present invention is a tennis racket with two differently tensioned stringings.

It is known, in the practice of tennis, that all the strokes with which the tennis player may hit the ball can be substantially grouped into two distinct categories, namely the forehand strokes, by which the ball is hit by one striking surface, and backhand strokes, by which the ball is hit by the opposite striking surface.

It is also known that the strokes made on one's forehand always differ, both by action and, above all, by strength, from the strokes made on one's backhand, and this is due to the individual player's anatomic and functional characteristics, as well as to the preferred postures he assumes when playing, either out of habit or to remedy unexpected situations.

The reason for the above difference lies in the fact that the tensioning of the racket unique stringing, even if it varies in time, is the same whether the ball is hit on one's forehand or on one's backhand, whilst the force with which the ball is hit is a direct function of the strength the player transmits through the racket.

The inconvenience referred to above is of some matter above all for the amateur players; however, it has negative effects also for the professional players, whose experience enables them to make up for it in some cases only.

It has now been conceived, and forms the object of the present invention, a tennis racket allowing to wholly make up for the above inconvenience, in that it is provided with two differently tensioned stringings.

One of the main objects of the present invention is thus to provide a racket of the above mentioned kind, having two different striking surfaces the tensioning of which is conveniently graded so as to fit the relevant stringings to the user's peculiar way of playing.

According to the present invention, therefore, a greater tension will be given to the stringings that the player will use for his weaker stroke (e.g. the backhand), whilst the other stringing will be tensioned to a lesser extent.

The characteristics as well as the advantages of the tennis racket according to the present invention will clearly result from the following detailed description of some of its non limiting embodiments, with reference to the enclosed drawings wherein:

FIGURE 1 is a schematic front view of the racket according to the present invention, wherein one stringing is only partially drawn;

FIGURE 2 is a view of the racket along section

II-II of Fig. 1;

FIGURE 3 is a view of the racket of the present invention along the direction of arrow III of Fig. 1;

FIGURE 4 is a view similar to that of Fig. 2 of a first embodiment of the racket according to the invention;

FIGURE 5 is a view similar to that of Fig. 3 of the said first embodiment of the racket according to the invention, and

FIGURE 6 is a view similar to that of Fig. 3 of a second embodiment of the racket according to the invention.

Reference will be first made to Figs. 1 to 3 to describe in detail the first embodiment of the racket according to the invention.

From the abovementioned figures it can be seen that the racket structure substantially comprises an oval frame 10 within which are stretched a first and a second stringing, indicated by 12 and 14 respectively, and is provided with a handle or grip 16.

Frame 10 has, on its outer profile (Figs. 2 and 3), three peripheral ribs 18 substantially equidistant from one another and defining two grooves, each of which houses the string portions that are outside the bores 20 - made in frame 10 - provided for making the stringings 12 and 14. In this manner the said string portions will not protrude from the racket frame profile.

In Figs. 2 and 3, in particular, the strings making up the stringings 12 and 14 are not represented just for the sake of clearness, in order to show how frame 10 is shaped. From these figures it can be seen that bores 20, through which the said strings making up the stringings 12 and 14 are passed, are substantially equidistant from one another and are distributed in essentially the same amount into the grooves defined by ribs 18.

In Figs. 4 and 5, wherein like reference numbers denote the same elements of Figs. 1 to 3, it can be seen that ribs 18 are two, and are substantially on the two opposite faces of frame 10, defining thus a single groove wherein are set the two rows of bores 20 for the two stringings 12 and 14. In this case the bores 20 of one row are slightly staggered with respect to bores 20 of the other row.

The embodiment of Figs. 4 and 5, however, is fit for providing the same performances and for achieving the same advantages as the embodiment of Figs. 2 and 3.

Fig. 6 shows the third embodiment of the racket according to the invention; in this drawing the same elements of Figs. 2 and 3 have been in-

licated by like reference numbers.

The embodiment of Fig. 6 is similar to that of Figs. 4 and 5, as ribs 18 are two and define in this case too a single groove wherein are set two rows of bores 20, being in a slightly staggered arrangement with respect to each other.

The embodiment of Fig. 6 provides, between the two rows of bores 20, a substantially zigzag-shaped rib 22 which has also the function to stiffen the wall of the groove defined by both ribs 18.

The materials of which the racket according to the invention can be made can be as various as possible, particularly the known ones of which the traditional rackets with only one stringing consist.

One of the main advantages that can be achieved by the racket according to the invention lies in the fact that the two distinct stringings 12, 14 will be differently tensioned with respect to the specific requirements of the player, who will ask that the tensioning be adjusted in accordance with his peculiar way of playing, particularly as far as the forehand and backhand strokes are concerned. The two tensionings will be therefore balanced depending on the force which the player transmits by said strokes: more precisely, said tensionings will be inversely proportional to the said force.

Should the differentiated action of the two stringings 12, 14 be enhanced, it will also be possible to vary the width of the meshes of each stringing, so as to make the abovementioned counterbalancing action still more efficacious.

The two stringings could be easily differentiated by any known means such as, for instance, by differently colouring the strings, or by providing handle 16 with an anatomic grip, or by any other means suitable to allow the player to immediately make out how to grasp the racket properly.

It is obvious, finally, that variations and/or modifications can be made to the tennis racket according to the present invention, without thereby departing from the scope of the invention itself.

## Claims

1. Tennis racket, characterized by the fact of comprising two distinct stringings (12, 14), having each a different tensioning.

2. Tennis racket according to claim 1, characterized by the fact that both stringings (12, 14) are stretched within a single oval frame (10).

3. Tennis racket according to claim 2, characterized by the fact that the oval frame (10) has at least two peripheral ribs (18) on its outer profile, which define at least one groove along which are set the bores (20) in which the strings of stringings (12, 14) are inserted.

4. Tennis racket according to claim 3, character-

ized by the fact that the bores (20) of one stringing are separated from the bores (20) of the other stringing by a peripheral rib (18, 22) of the oval frame (10).

5. Tennis racket according to claim 4, characterized by the fact that the said rib (18) is substantially linear.

6. Tennis racket according to claim 2, characterized by the fact that the said rib (22) is essentially zigzag-shaped.

7. Tennis racket according to claim 2, characterized by the fact that the bores (20) of one stringing are in line with the corresponding bores (20) of the other stringing along an axis substantially perpendicular to the stringings (12, 14).

8. Tennis racket according to claim 2, characterized by the fact that the bores (20) of one stringing are substantially staggered with respect to the bores of the other stringing.

9. Tennis racket according to claim 1, characterized by the fact that the meshes of one stringing have a different cross section from that of the other stringing.

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Fig.1

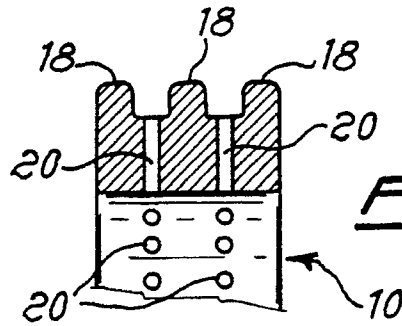
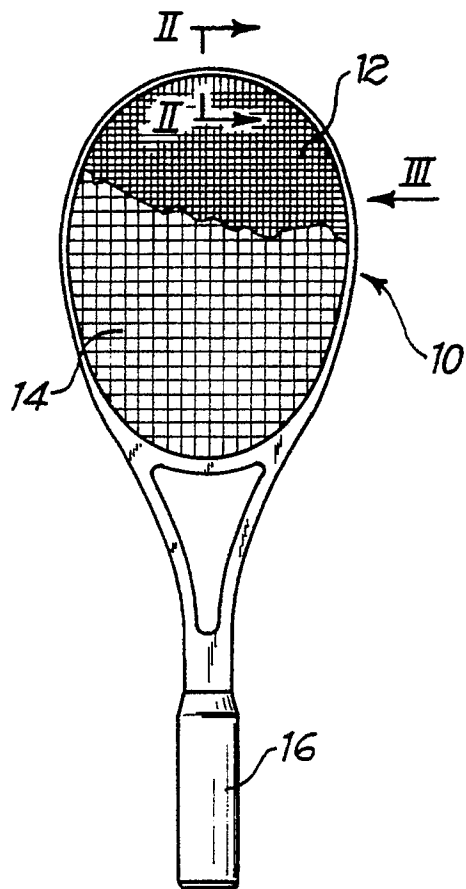


Fig.2

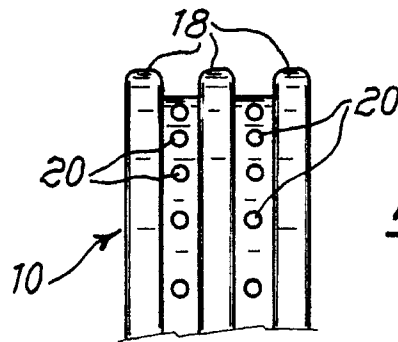


Fig.3

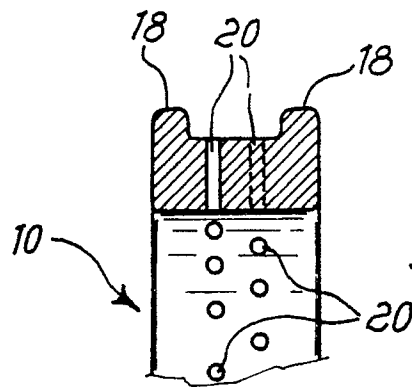


Fig.4

Fig.6

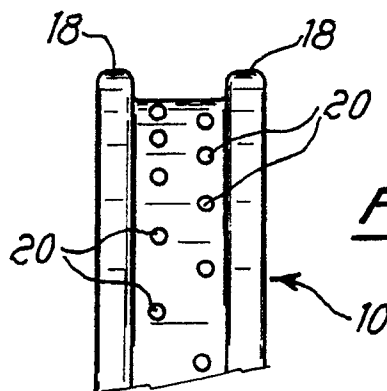
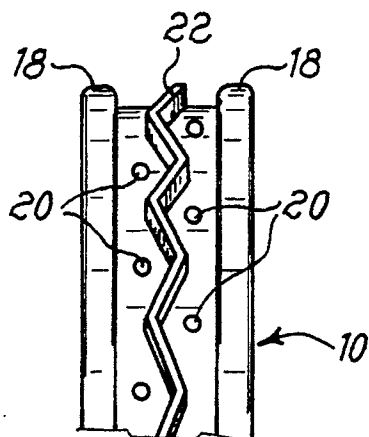


Fig.5



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## EUROPEAN SEARCH REPORT

Application Number

EP 90 83 0418

| 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.5) |
| X                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | US-A-4 804 183 (B.A. DORAN)<br>* Column 2, lines 19-29 *<br>- - -                                     | 1-4,7                        | A 63 B<br>51/06                               |
| X                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | DE-A-3 739 433 (P. BOXHAMMER)<br>* Column 2, lines 47-54; column 3, lines 11-21 *<br>- - -            | 1-3,7,8                      |                                               |
| X                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | BE-A-9 053 10 (S.-K. TSAI)<br>* Claim 1, lines 6,7; claim 4, line 21; claim 5, line 24 *<br>- - - - - | 1,2,9                        |                                               |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                                                                                       |                              | TECHNICAL FIELDS<br>SEARCHED (Int. Cl.5)      |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                                                                                       |                              | A 63 B                                        |
| The present search report has been drawn up for all claims                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                                                                                       |                              |                                               |
| Place of search                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                                                                                       | Date of completion of search | Examiner                                      |
| The Hague                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                                                                                                       | 27 November 90               | GERARD B.E.                                   |
| <div>CATEGORY OF CITED DOCUMENTS</div> <div><div>X: particularly relevant if taken alone<br/>Y: particularly relevant if combined with another document of the same category<br/>A: technological background<br/>O: non-written disclosure<br/>P: intermediate document<br/>T: theory or principle underlying the invention</div><div>E: earlier patent document, but published on, or after the filing date<br/>D: document cited in the application<br/>L: document cited for other reasons<br/>-----<br/>&amp;: member of the same patent family, corresponding document</div></div> |                                                                                                       |                              |                                               |