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(12) # EUROPEAN PATENT APPLICATION

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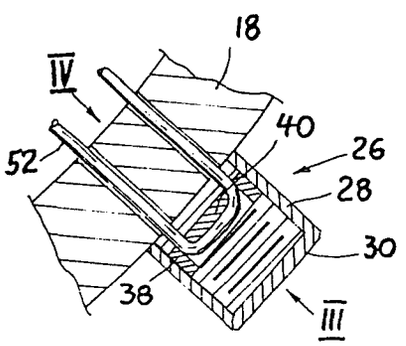
(54) **Tensioning arrangement.**

(57) The invention discloses a string tensioning device (26) for use on a stringed racket. The device includes a string support member (38) adapted to be fitted to a string (52) on a racket which is to be tensioned; and an abutment member (28) cooperating with the string support member. The abutment member is adapted to abut against the racket frame (18). The string support member and the abutment member are adapted to be moved relative to each other for moving the string support member relative to the racket frame for variation of the tension of the string.



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BACKGROUND OF INVENTION

1. Field of Invention

The present invention relates to string tensioning devices.

More particularly, the invention relates to string tensioning devices for stringed rackets.

A problem with stringed rackets is that the strings, after some time, become slack and have to be retensioned. Normally the strings are removed and new strings are provided.

It is an object of the invention to suggest a string tension device for assisting in overcoming this problem.

In specification hereinafter the expression "stringed racket" or "racket" is to be understood to include any type of racket provided with strings, such as for playing tennis, squash, badminton or any other racket game.

2. Brief description of Invention

According to the invention, a string tensioning device for use on a stringed racket includes a string support member adapted to be fitted to a string on a racket which is to be

tensioned; an abutment member cooperating with the string support member and being adapted to abut against the racket frame; the string support member and the abutment member being adapted to be moved relative to each other for moving the string support member relative to the racket frame for variation of the tension of the string.

The abutment member may be in the form of an internally threaded cylinder being adapted to abut with one end against a racket frame, and the string support member may be in the form of a cooperating externally threaded disc having a location formation for locating a string to be tensioned, the cylinder being adapted to be rotated relatively to the disc for moving it towards or away from the racket frame.

The cylinder may be closed at its end opposite to its end adapted to abut against a racket frame.

The location formation of the disc may include opposite cut-outs on the disc edge for receiving a string and allowing it to be located firmly on the disc.

The cylinder may have a hole for receiving a lever for rotating the cylinder relative to the disc.

The invention also extends to a racket provided with a number of string tensioning devices as set out herein.

3. Description of the Drawing

The invention will now be described by way of example with reference to the accompanying schematic drawings.

In the drawings there is shown in

Figure 1 a general view of a racket, eg. for playing tennis;

Figure 2 on a larger scale a sectional detail of part the racket frame seen from the side and on which a string tensioning device in accordance with the invention is provided;

Figure 3 an end view of the tensioning device, comprising a tension cylinder and a tension disc, seen along arrow III in Figure 2 but without details of the racket frame;

Figure 4 an end view of the tensioning device seen along arrow IV in Figure 2 but without details of the racket frame;

Figure 5 a side view of the tension disc;

Figure 6 an end view of tension disc seen along arrow VI in Figure 5;

Figure 7 a side view of the tension cylinder;

Figure 8 a plan view of the tension tool to be used for turning the tension cylinder; and

Figure 9 an end view seen along arrow IX in Figure 8 of the tool.

Referring to Figure 1, the tennis racket 10 has a frame 12 which comprises a handle 14 with a gripping end 16 and an oval shaped stringed frame part 18. The part 18 is provided with strings 20.

The device as illustrated in Figure 2 to 7 is provided for tensioning strings in the region indicated by reference numerals 22 and 24. However, the device also can be used for tensioning strings in any other regions. For instance, in the case of a racket handle having a forkshaped or V-shaped connection to the frame part, the tensioning devices can be provided on the racket frame in the region between the forks or the V-legs.

Referring now to Figures 2 to 7 the tensioning device 26 includes an abutment member in the form of a tension cylinder 28 which is closed at one end 30 and which is open at the opposite end 32. It is screw threaded internally. It furthermore has an adjustment hole 34, the function of which will be described later.

The closed end 30 of the cylinder 28 is provided with a

marking line 36.

The device further includes a string support member in the form of a tension disc 38. The disc 38 has a smooth domeshaped recess 40 so that a circumferential wall 42 is defined. The wall 42 is threaded on its circumference 44. It is provided with two opposite cutouts 46 and 48 and a marking cutout 50. The marking 50 indicates the beginning of the thread on the wall 42. The string, which is to be tensioned and which is indicated by reference numeral 52 in Figure 2, passes through the frame 18 as shown in Figure 2 and fits into the cutouts 46, 48 to lie on the domeshaped recess 40.

For turning the cylinder 28 the tool illustrated in Figures 8 and 9 is used. This tool 54 includes a handle 56 with a pin 58 and a locking projection 60 attached thereto.

The pin 58 is inserted into the hole 34 and then the tool 54 is used to rotate the cylinder 28. By turning the cylinder 28 the tension disc 38 will turn towards or away from the frame 18 and thereby vary the tension of the string 52 by slackening or tightening it.

The device 26 preferably is made of very light material, such as aluminium.

Any number of devices 26 can be provided on a frame 18 as may be required.

The marking 36 on the closed end 30 of the cylinder 28 is used to indicate the beginning of the thread inside the cylinder 28 and also to note the number of turns made for tensioning purposes.

In use a racket frame 18, when being stringed, will be provided with a number of tension discs 38 over each of which a string passes. These will be placed with their marking cut-outs 46 all facing in the same direction. When the frame 18 has been stringed fully, a tension cylinder 28 will be turned onto each disc 28. To do so, the marking 36 will be placed in allignment with the marking 46 of the appropriate disc 38 and then the cylinder 28 will be turned so that the disc 38 is "lifted" or "moved" away from the frame 18 until the correct tension has been obtained. This procedure will be repeated with all devices 26. It must be noted that although only longitudinal strings, ie. those parallel to the handle, are suggested to be tensioned, in doing so also transverse strings will automatically be tensioned.

When a player decides to vary the tensioning of the strings on his racket, he can merely turn the appropriate cylinder 28 in the required direction (ie. for tensioning further or for reducing tension) until the desired tension has been obtained.

PATENT CLAIMS

1. A string tensioning device for use on a stringed racket, characterized thereby that it includes a string support member (38) adapted to be fitted to a string (52) on a racket (10) which is to be tensioned; and an abutment member (28) cooperating with the string support member (38) and being adapted to abut against the racket frame (18); the string support member (38) and the abutment member (28) being adapted to be moved relative to each other for moving the string support member (38) relative to the racket frame (18) for variation of the tension of the string (52).

2. A device as claimed in claim 1, characterized thereby that the abutment member is in the form of an internally threaded cylinder (28) being adapted to abut with one end against a racket frame (18), and the string support member is in the form of a cooperating externally threaded disc (38) have a location formation (46, 48) for locating a string (52) to be tensioned, the cylinder (28) being adapted to be rotated relatively to the disc (38) for moving it towards or away from the racket frame (18).

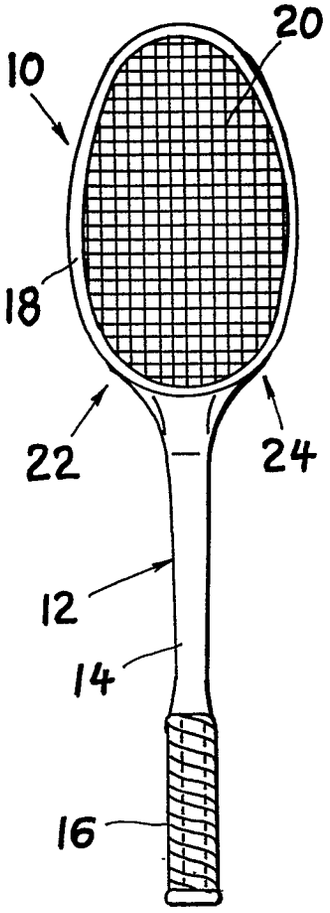
3. A device as claimed in claim 2, characterized thereby that the cylinder (28) is closed at its end (30) opposite to its end adapted to abut against a racket frame (18).

4. A device as claimed in claim 2 or claim 3, characterized

thereby that the location formation of the disc (38) includes opposite cut-outs (46, 48) on the disc edge (42) for receiving a string (52) and allowing it to be located firmly on the disc.

5. A device as claimed in anyone of claims 2 to 4, characterised thereby that the cylinder (28) has a hole (34) for receiving a lever (58) for rotating the cylinder (28) relative to the disc (38).

6. A device as claimed in anyone of the preceding claims, characterized thereby that it is made of light material such as aluminium.



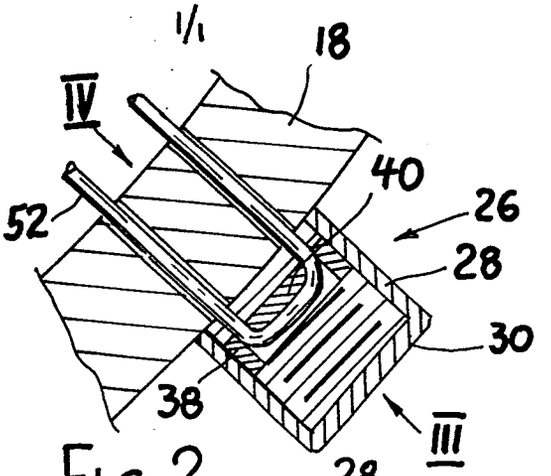


FIG 2

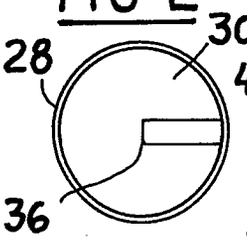


FIG 3

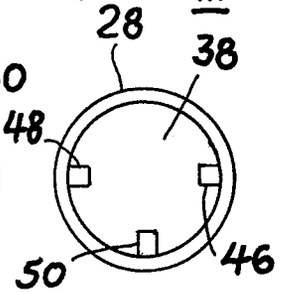


FIG 4

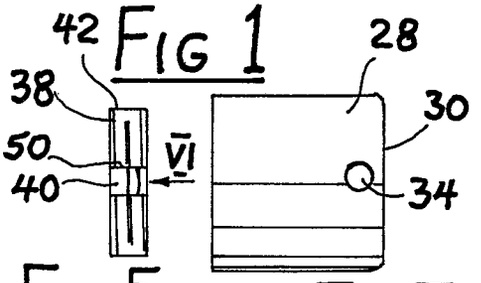


FIG 1

FIG 5

FIG 7

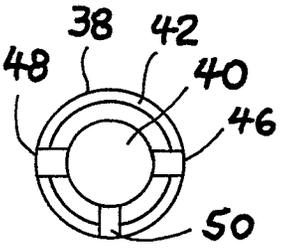


FIG 6

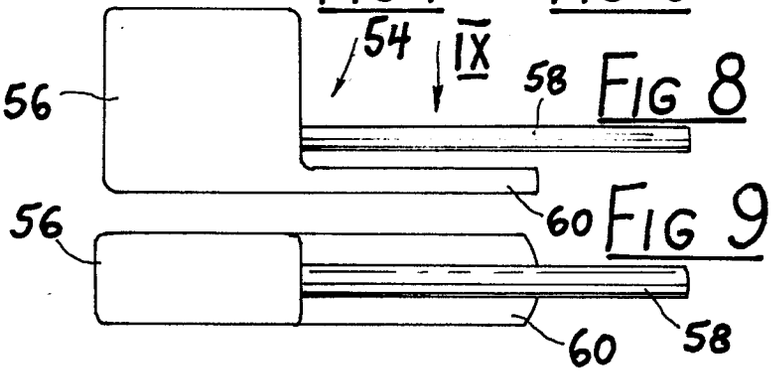


FIG 8

FIG 9

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EUROPEAN SEARCH REPORT

0109087
Application number

EP 83 11 1403

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. ³)
A	FR-A- 855 446 (A. VOUMARD) * Page 2, lines 5-43; figure 9 *	1,2	A 63 B 51/12
A	US-A-1 559 986 (C.F. QUICK) * Page 1, lines 77-92; figure 3 *	1	
A	US-A-3 884 467 (R. SOMMER) * Column 2, lines 13-27; figures 1, 3, 4, 8 *	1	
A	US-A-4 340 225 (C.R. WILSON) * Figures 1-3 *	1	

TECHNICAL FIELDS SEARCHED (Int. Cl. ³)

A 63 B 49/00
A 63 B 51/00
A 63 B 59/00

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
BERLIN	03-02-1984	CLOT P.F.J.

CATEGORY OF CITED DOCUMENTS

X : particularly relevant if taken alone
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