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(54) Games racket with vibration-damping assembly.

(57) The shaft (single or twin) of a racket contains one or more vibration-damping assemblies.

Each assembly consists of a vibrating-member (40) which is received in a hole (30) in the shaft (13) and retained therein by a pair of elastically-deformable cap-members (31, 32). The dimensions of the cap-members (31, 32) relative to the vibrating-member (40) are such that the vibrating-member (40) is capable of movement in response to an applied impact, for example an impact occurring when the racket is used in play.

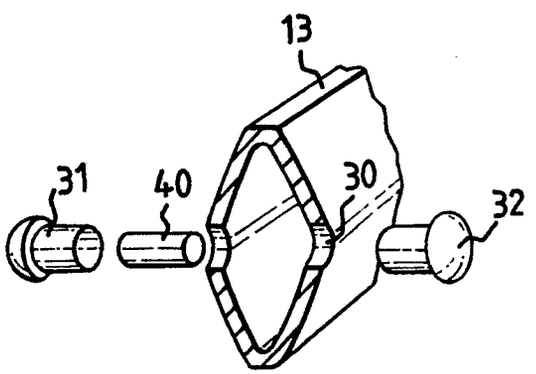

FIG.3

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GAMES RACKET WITH VIBRATION-DAMPING ASSEMBLY

This invention relates to a games racket provided with one or more vibration damping assemblies.

Rackets made of metal and/or composite materials lack the inherent vibration-damping characteristics of wooden rackets. Thus, in the case of metal and/or composite rackets, additional damping means are desirable.

Accordingly, the present invention provides a games racket including a head portion and a shaft portion, in which one or more vibration-damping assemblies are mounted within or attached to the shaft portion.

In one embodiment of the present invention, the shaft portion comprises a single shaft member including one or more of said vibration-damping assemblies.

In a second embodiment, the shaft portion comprises twin shaft members each of said twin shaft members including one or more of said vibration-damping assemblies.

Each vibration-damping assembly comprises a vibrating-member to be received in a hole provided in the shaft member and a pair of elastically-deformable cap-members to retain said vibrating member in said hole, the dimensions of said cap-members relative to said vibrating-member being such that the vibrating-member is capable of movement in response to an applied impact on the racket, for example the impact received when the racket is used in play.

In accordance with the present invention, the vibration-damping assemblies are located so that movement of the vibrating-member takes place in a direction parallel to the plane of the stringing of the racket.

The vibrating-member is made of a material of high density such as a metal, and may suitably have a mass of from 5 to 20 g, preferably from 7 to 10 g. The vibrating-member may preferably have a regular geometrical configuration and may comprise an elongate rod.

The cap-members may be made of any suitable elastically-deformable material, for example natural rubber, a synthetic rubber or a rubber-like material. A particularly-preferred material is the cellular material available under the Registered Trade Mark SORBOTHANE.

Preferably, each vibration-damping assembly is located at or near an antinode of vibration of the racket.

The present invention will be illustrated, merely by way of example, in the following description and with reference to the accompanying drawings.

In the drawings (wherein like numerals denote like parts) :

Figure 1 is a schematic view of a racket incorporating vibration-damping assemblies according to the present invention;

Figure 2 is a section on line II-II of Figure 1 (with parts cut away);

Figure 3 is an exploded section on line III-III of Figure 1.

A tennis racket (shown generally at 10) comprises a head 11 for stringing (stringing not shown) and twin shafts 12 and 13. Each shaft is provided with three identical vibration-damping assemblies 20, 21 and 22.

Each vibration-damping assembly is received in a hole 30 in the shaft and comprises a pair of elastically-deformable cap-members 31 and 32 which enclose a metal rod 40. The dimensions of cap-members 31 and 32 relative to those of metal rod 40 are such that the rod 40 is capable of movement in response to an applied vibration, e.g. when the racket is used in play.

Movement of the rod 40 in response to vibration takes place in a direction parallel to the plane of the stringing, i.e. in the direction indicated by arrows AA^1 in Figure 2.

Claims

1. A games racket including a head for stringing and a shaft portion, characterised in that one or more vibration-damping assemblies (20, 21, 22) are mounted within or attached to the shaft portion.

2. A racket according to Claim 1, characterised in that the shaft portion comprises a single shaft member including one or more of said vibration-damping assemblies (20, 21, 22).

3. A racket according to Claim 1, characterised in that the shaft portion comprises twin shaft members (12, 13), each of said shaft members including one or more of said vibration-damping assemblies (20, 21, 22).

4. A racket according to Claims 1, 2, or 3, characterised in that each said vibration-damping assembly (20, 21, 22) comprises a vibrating-member (40) to be received in a hole (30) provided in the shaft member (12, 13), and a pair of elastically-deformable cap-members (31, 32) to retain said vibrating-member (40) in said hole (30), the dimensions of said cap-members (31, 32) relative to said vibrating-member (40) being such that the vibrating-member (40) is capable of movement in response to an applied impact on the racket (10).

5. A racket according to Claim 4, characterised in that the direction of movement (AA) of the

vibrating-member (40) is parallel to the plane of stringing of the racket (10).

6. A racket according to Claim 4 or 5, characterised in that the vibrating-member (40) is made of a high-density material, for example a metal.

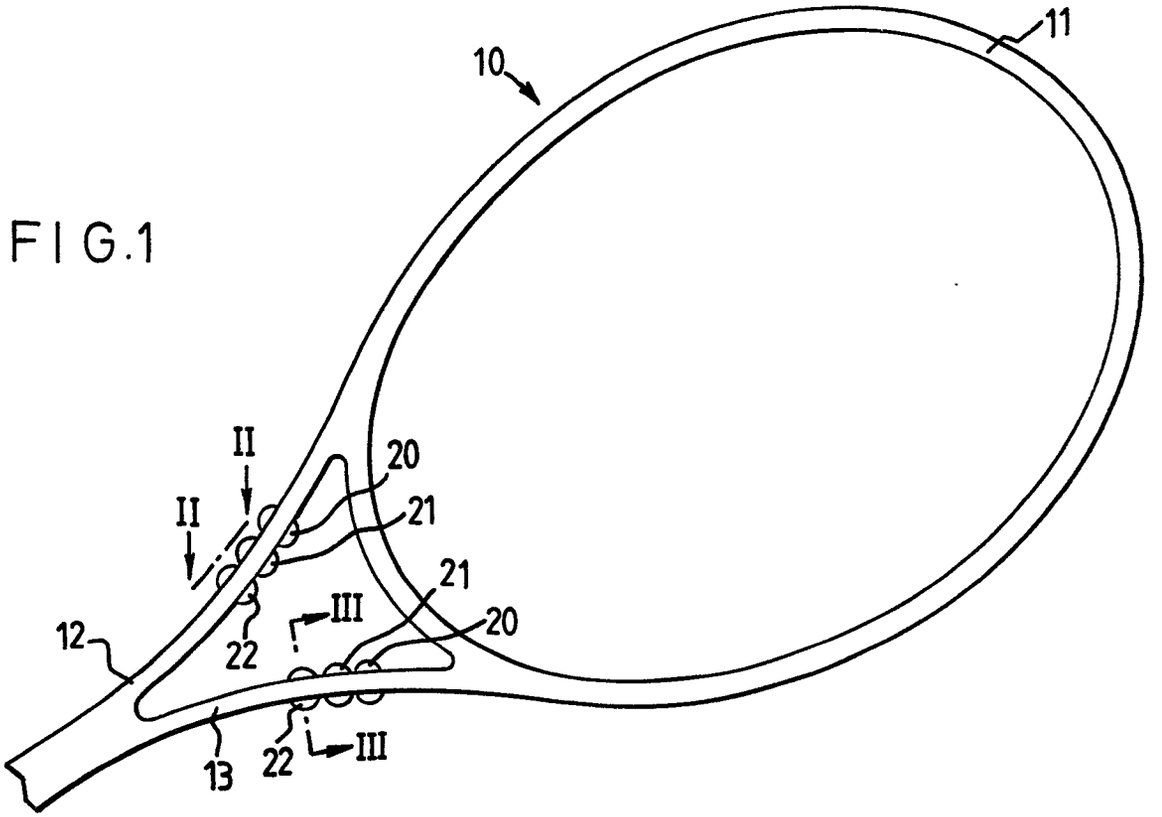
7. A racket according to Claim 4, 5 or 6, characterised in that the vibrating-member (40) has a mass of from 5 to 20g, for example from 7 to 10g.

8. A racket according to any one of Claims 4 to 7, characterised in that the vibrating-member (40) has a regular geometrical configuration, for example the configuration of an elongate rod.

9. A racket according to any one of Claims 4 to 8, characterised in that the elastically-deformable cap-members (31, 32) are made of natural rubber, a synthetic rubber or a rubber-like material, for example a cellular material.

10. A racket according to any one of Claims 1 to 9, characterised in that each vibration-damping assembly (20, 21, 22) is located at or near an antinode of vibration of the racket (10).

FIG.1



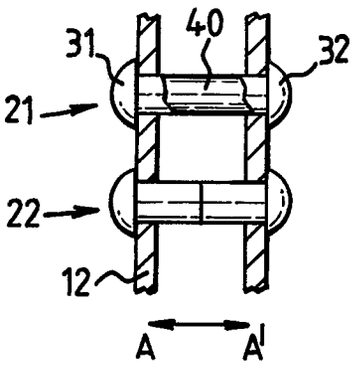


FIG.2

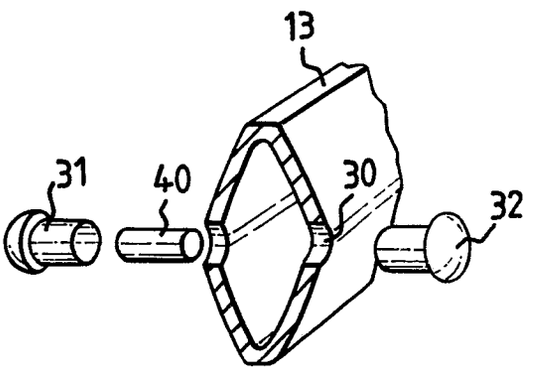


FIG.3