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(71) Applicant: **DUNLOP LIMITED**
Silvertown House Vincent Square
London SW1P 2PL(GB)

(72) Inventor: **Buxton, John Martin**
7 Finch Avenue Sandal
Wakefield West Yorkshire WF2 6SE(GB)

(74) Representative: **Hinton, Alan Horace et al**
BTR Group Patent & Trade Mark Service P O Box 504
Erdington Birmigham B24 9QH(GB)

(54) Games racket with vibration-damping assembly.

(57) A games racket includes one or more vibration-damping assemblies (20) in its throat portion. Each assembly (20) may comprise a metal rod (21) supported at either end by elastically-deformable mounting-members (30, 31). The dimensions of the mounting-members (30, 31) relative to the rod (21) are such as to permit the rod (21) to move in the direction of an applied vibration (AA').

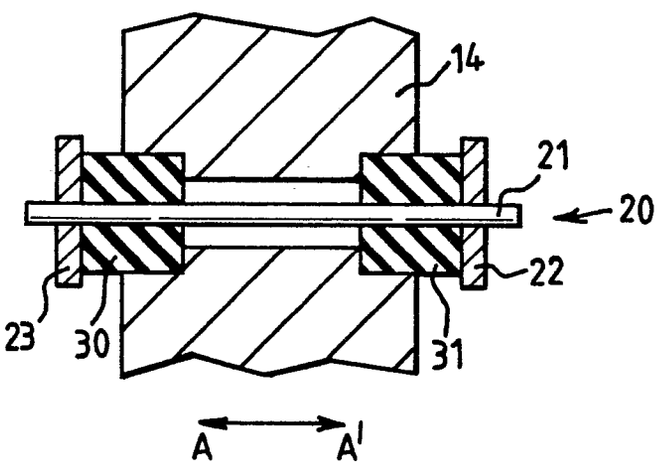

FIG.2

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GAMES RACKET WITH VIBRATION-DAMPING ASSEMBLY

This invention relates to a games racket provided with a vibration-damping assembly.

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 comprising a head for stringing, a shaft and a handle, together with a throat portion joining the head and the shaft to each other, in which the throat portion includes one or more vibration-damping assemblies.

Preferably, one single vibration-damping assembly is located on the throat portion at or near to an antinode of vibration of the racket, suitably on the longitudinal axis of the racket.

Alternatively, two vibration-damping assemblies are located on the throat portion, said assemblies being symmetrically placed relative to the longitudinal axis of the racket.

In accordance with the present invention, each vibration-damping assembly comprises a vibrating-member and one or more elastically-deformable mounting-members, said mounting-members attaching the vibrating-member to the racket whereby said vibrating-member is capable of free and elastic movement in the direction of an applied vibration.

Preferably, the direction of vibration is substantially perpendicular to the plane of the racket stringing.

The vibrating-member is of a high-density material such as a metal and suitably comprises a metal rod having a mass of from 5 to 15 g.

the elastically-deformable mounting-members may be made of natural rubber, a synthetic rubber or a rubber-like material. A suitable material is the cellular material available under the Registered Trade Mark SORBOTHANE.

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 reference numerals denote like parts) :

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

Figure 2 is a section on line II-II of Figure 1.

The racket, shown generally at 10, comprises a head 11 for stringing (not shown), a shaft 12 and a handle 13. A throat portion 14 joins the head and the shaft to each other. A single vibration-damping assembly, shown generally at 20, is located on the throat portion 14 on the longitudinal axis of the racket.

Referring now to Figure 2, the throat portion 14 is provided with a hole to receive a vibrating-member comprising a metal rod 21. The rod is further provided with heads 22 and 23 to locate the rod. The mounting-members comprise two deformable bushes 30 and 31, which permit movement of the rod within the throat portion in response to applied vibration when the racket is used in play. Movement takes place in the direction of arrow AA'.

A vibration-damping assembly 20 according to the present invention was fitted to one of two otherwise identical metal-framed tennis rackets. The metal rod 21 weighed 7 g and the deformable bushes 30 and 31 were made of natural rubber.

The rackets were tested for vibration properties under unrestrained conditions and the vibration damping properties were found to be as follows :

Racket without damper : 19 units

Racket with damper : 23 units

The figures for vibration damping are calculated as follows :

Vibration damping = $\log_e$ (vibration decrement) x 10^3

The higher the figure the better the damping. The vibration properties described can readily be measured by those skilled in the art.

Claims

1. A games racket comprising a head for stringing, a shaft and a handle, together with a throat portion joining the head and the shaft to each other, characterised in that the throat portion (14) includes one or more vibration-damping assemblies (20).

2. A racket according to Claim 1, characterised in that one vibration-damping assembly (20) is located on the throat portion (14) at or near to an antinode of vibration of the racket (10), for example on the longitudinal axis of the racket (10).

3. A racket according to Claim 1, characterised in that two vibration-damping assemblies (20) are located on the throat portion (14), said assemblies (20) being symmetrically placed relative to the longitudinal axis of the racket (10).

4. A racket according to Claim 1, 2 or 3, characterised in that each vibration-damping assembly (20) comprises a vibrating-member (21, 22, 23) and one or more elastically-dependable mounting-member (30, 31), said mounting-members (30, 31) attaching the vibrating-member (21, 22, 23) to the racket, whereby said vibrating-mem-

ber (21, 22, 23) is capable of free and elastic movement in the direction (AA′) of an applied vibration.

5. A racket according to Claim 4, characterised in that the direction of vibration (AA′) is substantially perpendicular to the plane of the racket stringing.

6. A racket according to Claim 5 or 6, characterised in that the vibrating-member (21, 22, 23) consists of a high -density material, for example a metal rod, and in that it has a mass of from 5 to 15 g.

7. A racket according to Claim 4, 5 or 6, characterised in that the elastically-deformable mounting-members (30, 31) are made of material rubber, synthetic rubber or rubber-like material, for example a cellular material.

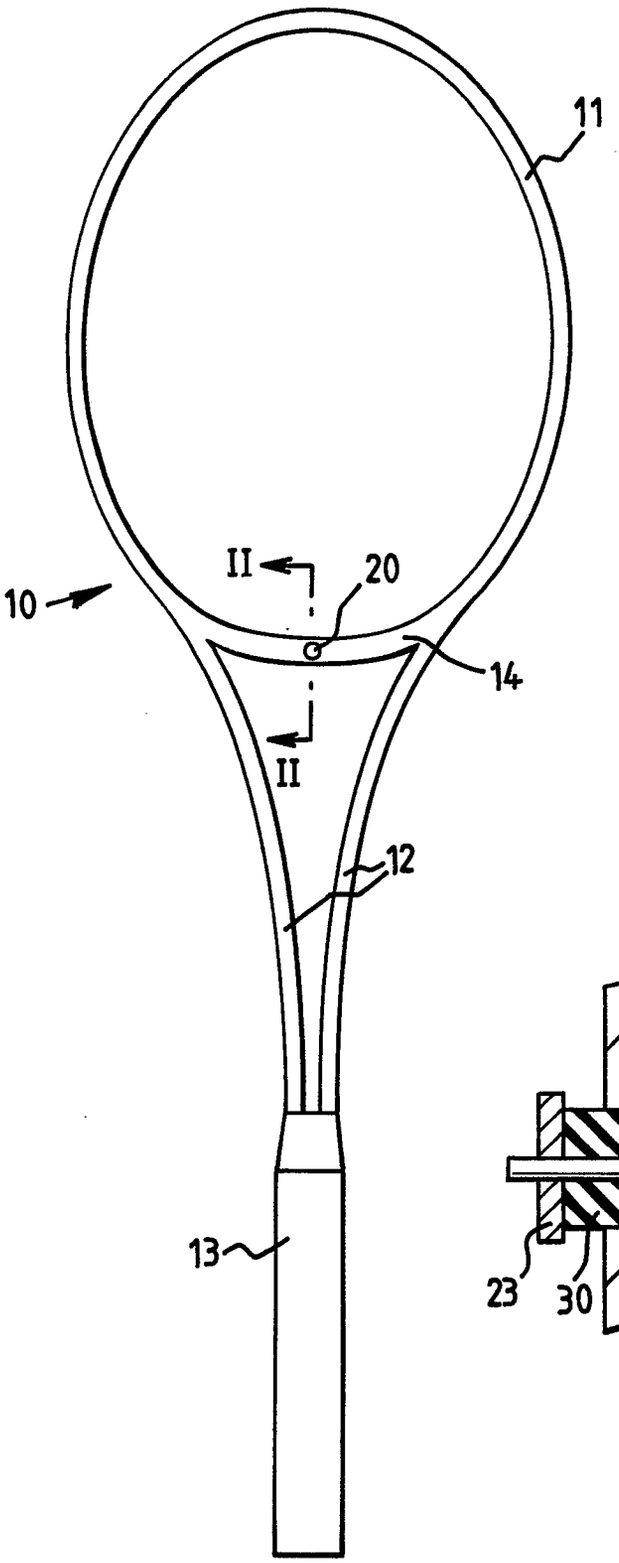

FIG.1

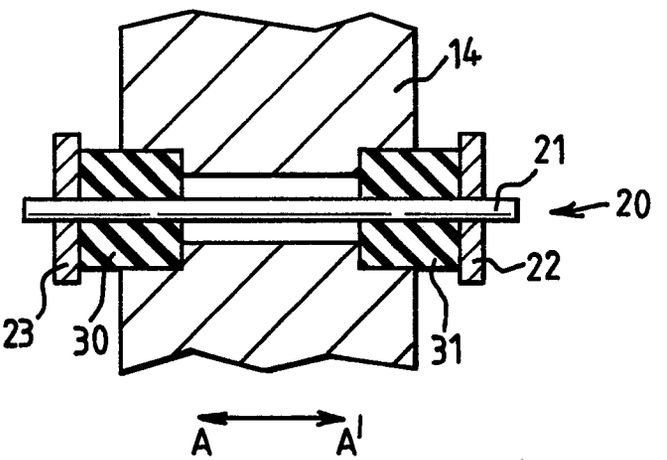

FIG.2