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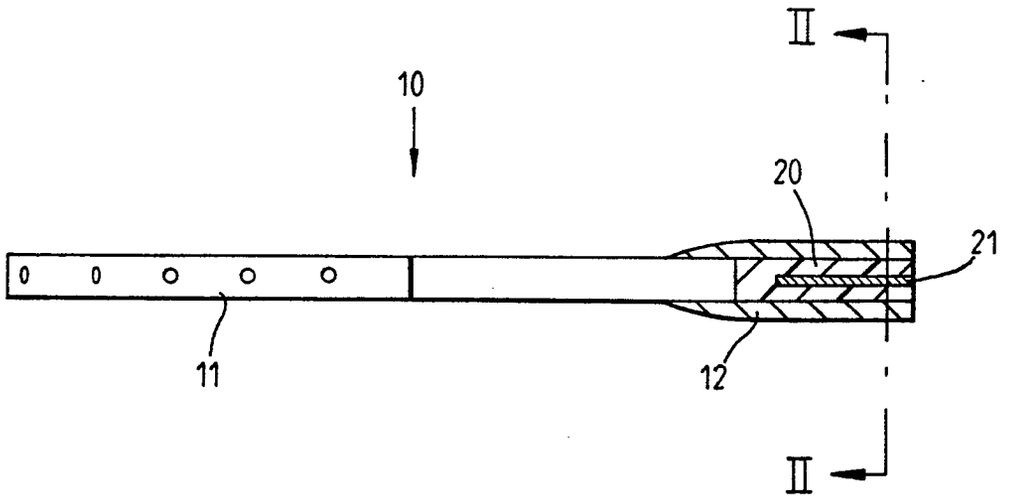
(54) Vibration-damping assembly for games rackets.

(57) A games racket (10) including a head for stringing (11) and a handle (12) is provided with one or more vibration damping assemblies in the handle (12). Each assembly comprises an elongate, elastically-deformable member (20) having a closed internal cavity. A weight (21) is contained within the cavity and is capable of movement therein in response to an applied vibration, for example when the racket is used in play.

Fig.1.



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VIBRATION-DAMPING ASSEMBLY FOR GAMES RACKETS

This invention relates to a vibration-damping assembly and to games rackets containing one or more vibration-damping assemblies.

Accordingly, the present invention provides a vibration-damping assembly comprising an longate, elastically-deformable member with a closed internal cavity, together with a weight contained within said cavity and being capable of movement therein in response to applied vibration.

The present invention also provides a games racket comprising a head for stringing, a shaft and a handle, in which the handle is hollow and contains one or more vibration-damping assemblies as described in the immediately-preceding paragraph.

The elastically-deformable member may be made of natural rubber, a synthetic rubber or a rubber-like material, which may be a cellular material. A particularly preferred material is the cellular material available under the Registered Trade Mark SORBOTHANE.

The weight may be made of any convenient material of high density, for example a metal. The weight used in accordance with the present invention may suitably have a mass of up to 20 g.

To facilitate movement of the weight within the cavity of the elastically-deformable material, the weight is preferably of regular geometrical configuration, e.g. cubic or spherical. In a particularly-preferred embodiment, the weight comprises an elongate cylindrical rod.

As described hereinabove, the vibration-damping assemblies according to the present invention are contained whithin the hollow handle of a games racket.

It has been found that optimum damping of vibration is achieved when the assemblies are located close to the position of maximum amplitude of vibration of the racket, i.e. an antinode. In practice, it has been found that the optimum location is at or near to the base of the handle. In such a location, there is minimum interference with the balance of the racket as perceived by a player.

In a first preferred embodiment of the present invention, a single vibration-damping assembly is located within the racket handle, coincident with the longitudinal axis of the racket.

In a second preferred embodiment, two vibration-damping assemblies are located within the racket handle and are symmetrically disposed relative to the longitudinal axis 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 partly-sectioned side view of a tennis racket containing a vibration-damping assembly according to the present invention;

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

A tennis racket, shown generally at 10, is made from a composite material and comprises a head for stringing 11 and a handle 12. The handle is provided with two adjacent cavities which are symmetrically disposed about the longitudinal axis of the racket. Each cavity contains an elastically-deformable member 20, 20A having a closed internal cavity which contains a weight 21, 21A respectively. The weights 21 and 21A comprised a metal rod weighing 7 g.

The racket was tested for vibrational properties under unrestrained conditions, both with and without the vibration damping assembly in position. The vibration damping properties were found to be as follows :

Without vibration damping assembly 28 units
With vibration damping assembly 19 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 vibration-damping assembly, characterised by an elongate, elastically-deformable member (20, 20A) with a closed internal cavity, together with a weight (21, 21A) contained within said cavity and being capable of movement therein in response to applied vibration.

2. An assembly according to Claim 1, characterised in that the elastically-deformable member (20, 20A) is made of natural rubber, a synthetic rubber or a rubber-like material, for example a cellular material.

3. An assembly according to Claim 1 or 2, characterised in that the weight (21, 21A) is made of a high-density material, for example a metal, and in that the weight (21, 21A) has a mass of up to 20 g.

4. An assembly according to Claim 1, 2 or 3, characterised in that the weight (21, 21A) is of regular geometrical configuration, for example cubic, spherical or an elongate cylindrical rod.

5. A games racket comprising a head for stringing, a shaft and a handle, characterised in that the handle (12) is hollow and contains one or

more vibration-damping assemblies according to any one of Claims 1 to 4.

6. A racket according to Claim 5, characterised in that the vibration-damping assemblies are located close to the position of maximum amplitude of vibration of the racket (10), for example at or near the base of the handle (12) of the racket (10).

7. A racket according to Claim 5 or 6, characterised in that the racket handle (12) contains a single vibration-damping assembly (20, 21) which is coincident with the longitudinal axis of the racket (10).

8. A racket according to Claim 5 or 6, characterised in that the racket handle (12) contains two vibration-damping assemblies (20, 21, 20A, 21A) which are symmetrically disposed relative to the longitudinal axis of the racket (10).

Fig.1.

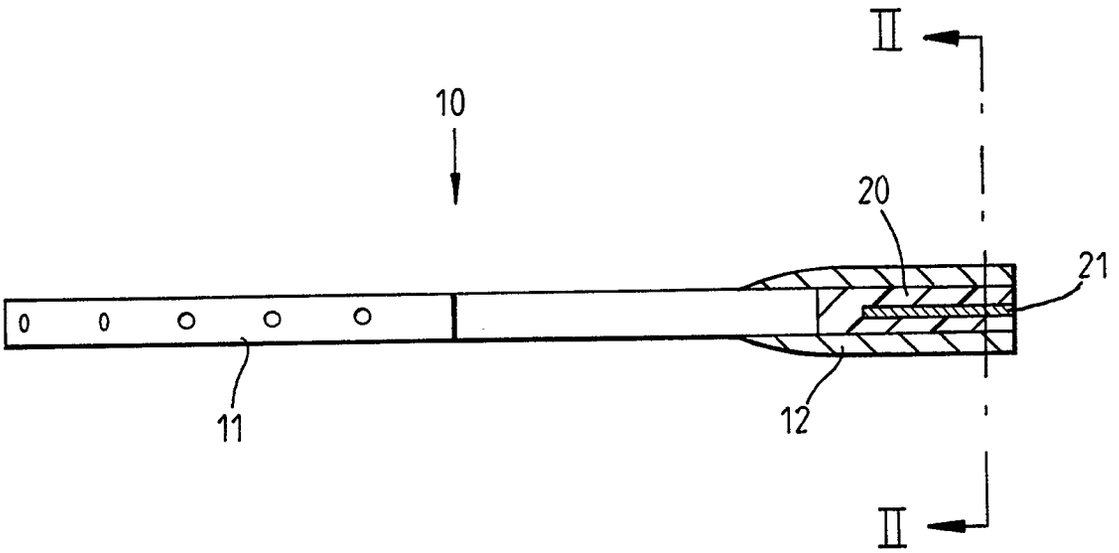

Fig.2.