PATENT SPECIFICATION

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DRAWINGS ATTACHED

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(54) IMPROVEMENTS IN OR RELATING TO RACKET FRAMES

(71) We, CARLTON SPORTS COMPANY LIMITED, (formerly The Carlton Tyre Saving Company Limited), of Dunlop House, Ryder Street, St. James's, London, S.W.1 (formerly of Shire Hill, Saffron Walden, Essex), a British Company, do hereby declare the invention, for which we pray that a patent may be granted to us, and the method by which it is to be performed, to be particularly described in and by the following statement:—

This invention relates to racket frames for rackets, such as badminton, tennis or squash rackets, which incorporate a looped portion for stringing formed from a metal tube.

In this specification the term "frame" means the looped portion of a racket within which stringing is carried out together with the shaft of the racket and a throat between said looped portion and shaft. The frame may also include a handle provided at the end of the shaft remote from the looped portion.

According to the invention there is provided a racket frame comprising a looped member formed from a metal tube, and a throat connecting said member to a shaft, characterised in that the wall thickness of the metal tube is greater in a part of the looped member which extends from the throat to a distance of up to 8 centimetres on both sides thereof than elsewhere in said looped member.

The metal tube forming the looped member may have outside dimensions greater within 8 centimeters of said throat than elsewhere in the looped member, the inside dimensions of the metal tube being the same throughout said looped member, or alternatively the outside dimensions of the metal tube may be the same throughout said looped member, and the inside dimensions thereof less within 8 centimeters of the throat than elsewhere in the looped member. Yet again, as another alternative, both the inside dimensions of the tube may be less, and the outside dimensions of the tube may be greater within 8 centimeters of the throat than elsewhere in the looped member.

The throat of the racket frame, i.e. the portion of the frame by which the looped member is joined to the shaft, may be formed from a continuation of one or both ends of the metal tube of the looped member, the shaft also being formed from such a continuation. Alternatively the shaft may be formed from a separate tube or tubes, or solid rod or rods secured, as by welding, to the looped member. In this case the portion of the frame in which the looped member is welded to the shaft defines the throat of the racket.

In order that the invention may be clearly understood and readily carried into effect it will now be more fully described with reference to the accompanying drawings, in which:—

Figure 1 shows a racket frame according to one embodiment of the invention, and

Figure 2 is a longitudinal section, on an enlarged scale, through a part of the looped member of the frame of Figure 1, along the line II—II.

The invention will be described with reference to the drawings by way of example as applied to a badminton racket frame having a looped member for stringing formed from a metal tube substantially as described in the Complete Specification of Patent No. 1,112,028 or 1,112,029 or 1,112,030 with reference to Figures 3, 4 and 5 of the respective patent specifications.

As can be seen in Figure 1 of the accompanying drawing, the badminton racket has a racket frame comprising a looped member 1 within which stringing (not shown) can be carried out, a shaft 2 and a throat 3 connecting the looped member 1 to the shaft 2. The racket frame also comprises a handle 4 which is formed at the end of the shaft 2 remote from the looped member 1. In this embodiment the looped member 1 and shaft 2 are both formed from metal tubes which are welded together. The

looped member 1 will be described in greater detail hereinafter, and the welded section defines the throat 3. The handle 4 may be of moulded plastics, or other suitable, material.

The metal of the tube forming the looped member 1 may be as defined in the Complete Specification of Patent No. 1,112,028 or 1,112,029 and may have integral flanged apertures 5 therethrough for the strings of the racket as can be seen in Figure 2 of the accompanying drawings. In accordance with an embodiment of the invention the metal tube forming the looped member 1 has a uniform wall thickness throughout its length apart from a portion 6 of said tube adjacent to the throat 3, which has a greater wall thickness than the remainder of the tube. As can be seen in Figure 2 this is achieved by forming said portion 6 with a larger outside diameter than the remainder of the tube, the inside diameter of the tube being constant throughout is length forming the looped member 1. The portion 6 may extend for any convenient length of the metal tube within 8 centimeters of the throat.

In one method of forming the looped member a metal tube having a uniform outside diameter substantially equal to the outside diameter of the portion 6 is used and the outside surface of the tube is machined except at the position of said portion 6. Thus a part of the metal tube, which is to be the portion 6 in the formed looped member 1, has a larger outside diameter than the remainder of the metal tube. The difference between the outside diameter at the portion 6 and elsewhere in the tube may be of the order of two thousandths (.002") of an inch in one embodiment. The metal tube, thus machined, may then be formed into the looped member 1 with the flanged apertures 5 substantially as described in the Complete Specification of Patent No. 1,112,028 or 1,112,029 or 1,112,030

Although the invention has been particularly described with reference to a badminton racket frame it may be applied to racket frames for other rackets such as tennis or squash rackets. Moreover the construction of the racket frame described with reference to Figures 1 and 2 may be modified in various ways without departing from the scope of the appendant claims. For example, the shaft and/or throat of the frame may be integral with the looped member, being formed from an extension of one or both ends of the metal tube forming said looped member.

WHAT WE CLAIM IS:—

1. A racket frame comprising a looped member formed from a metal tube, and a throat connecting said member to a shaft, in which the wall thickness of the metal tube is greater in a part of the looped member which extends from the throat to a distance of up to 8 centimeters on both sides thereof than elsewhere in said looped member.

2. A racket frame as claimed in Claim 1, in which the inside dimensions of said metal tube are less in said part than elsewhere in said looped member.

3. A racket frame as claimed in Claim 1 or 2, in which the outside dimensions of said metal tube are greater in said part than elsewhere in said looped member.

4. A racket frame as claimed in Claim 1, 2 or 3, in which the difference between the wall thicknes of said metal tube in said part and elsewhere in said looped member is of the order of two thousandths of an inch.

5. A racket frame substantially as described with reference to Figures 1 and 2 of the accompanying drawings or modified as herein described.

6. A racket having a frame as claimed in any preceding claim.

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1207662 COMPLETE SPECIFICATION
1 SHEET *This drawing is a reproduction of the Original on a reduced scale*

FIG.1.

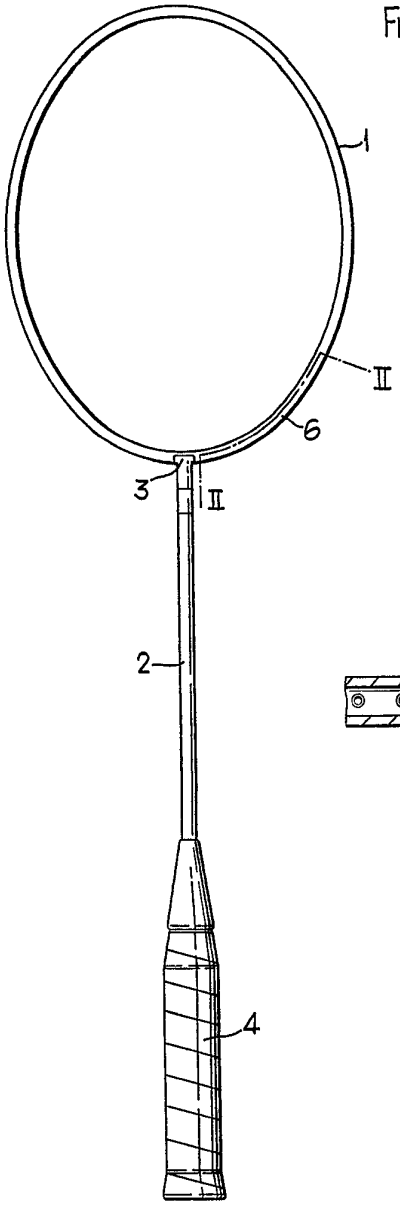

FIG.2.