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[54] RACKET FOR TENNIS OR SIMILAR GAMES

13 Claims, 10 Drawing Figs.

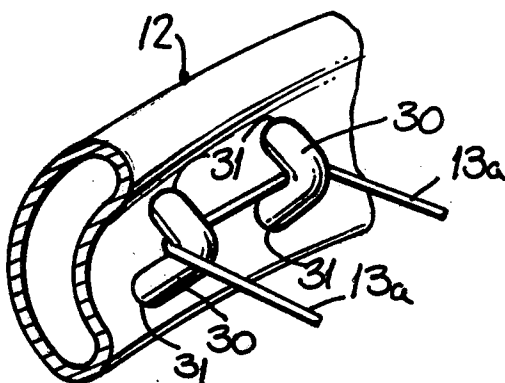
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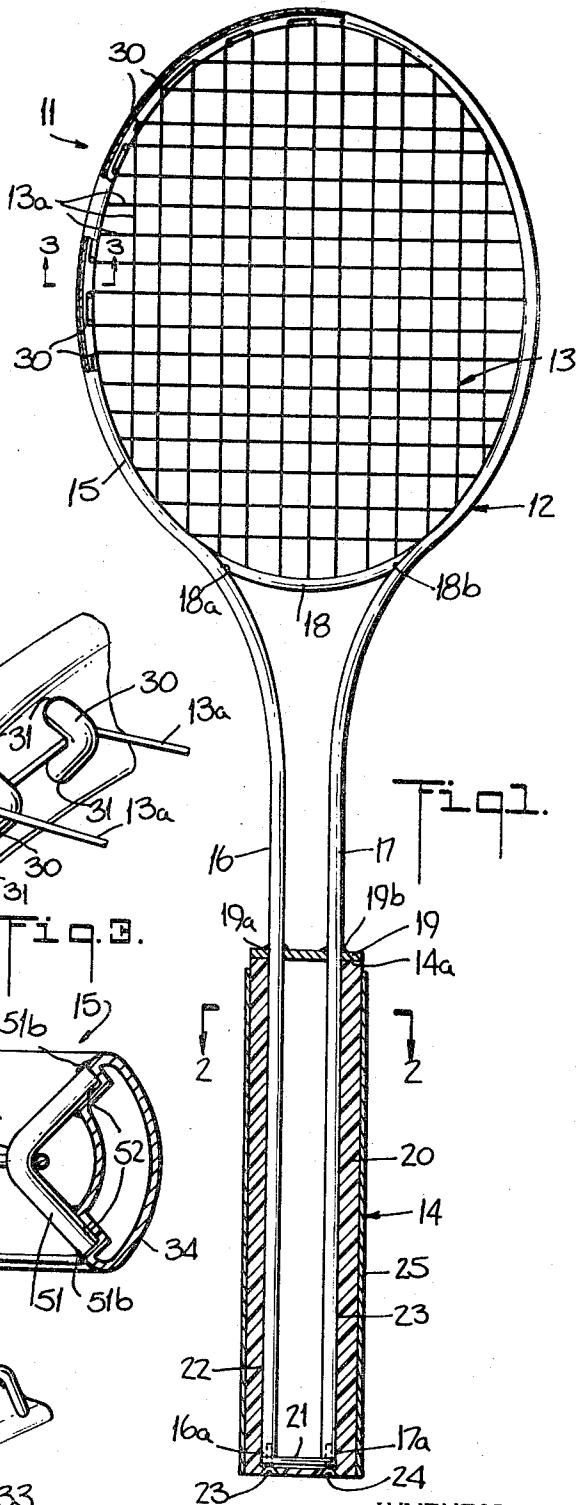
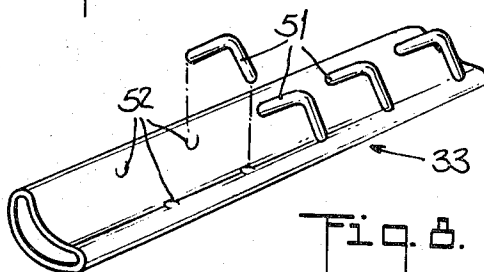
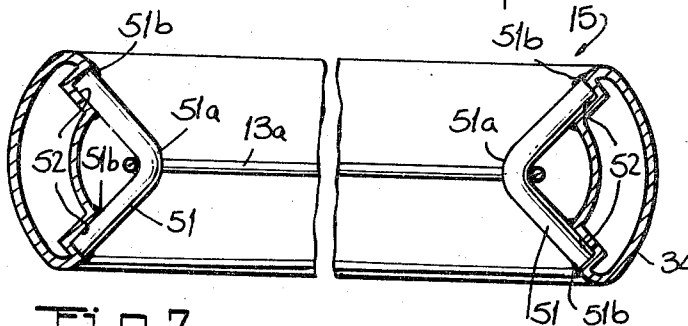
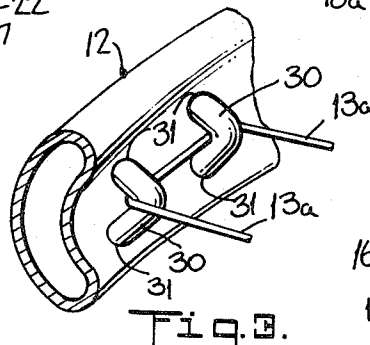
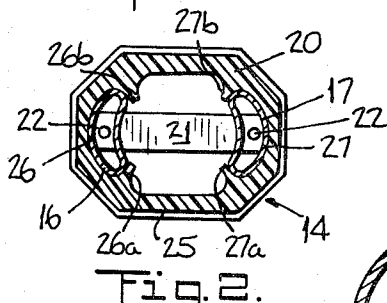
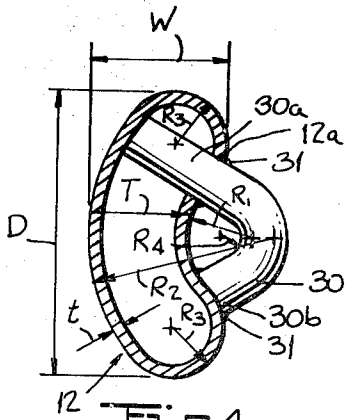
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ABSTRACT: Racket having tubular metal frame and detachable handle member; frame has double-circular arc airfoil shape in cross section, defining inner peripheral groove which circumscribes elliptical-shaped stringing area; permanently attached individual, metal rod string-strand supports span across groove at appropriate spaced-apart locations therealong to receive racket string strands; each strand support has crown defined by particular angular bend thereof; detachable handle slides on to pair of parallel-extending handle attachment portions defined by free ends of tubular frame; screws provide easily released attachment of handle to handle attachment portions either through heel of handle, or through metal spreader brazed between handle attachment portions.



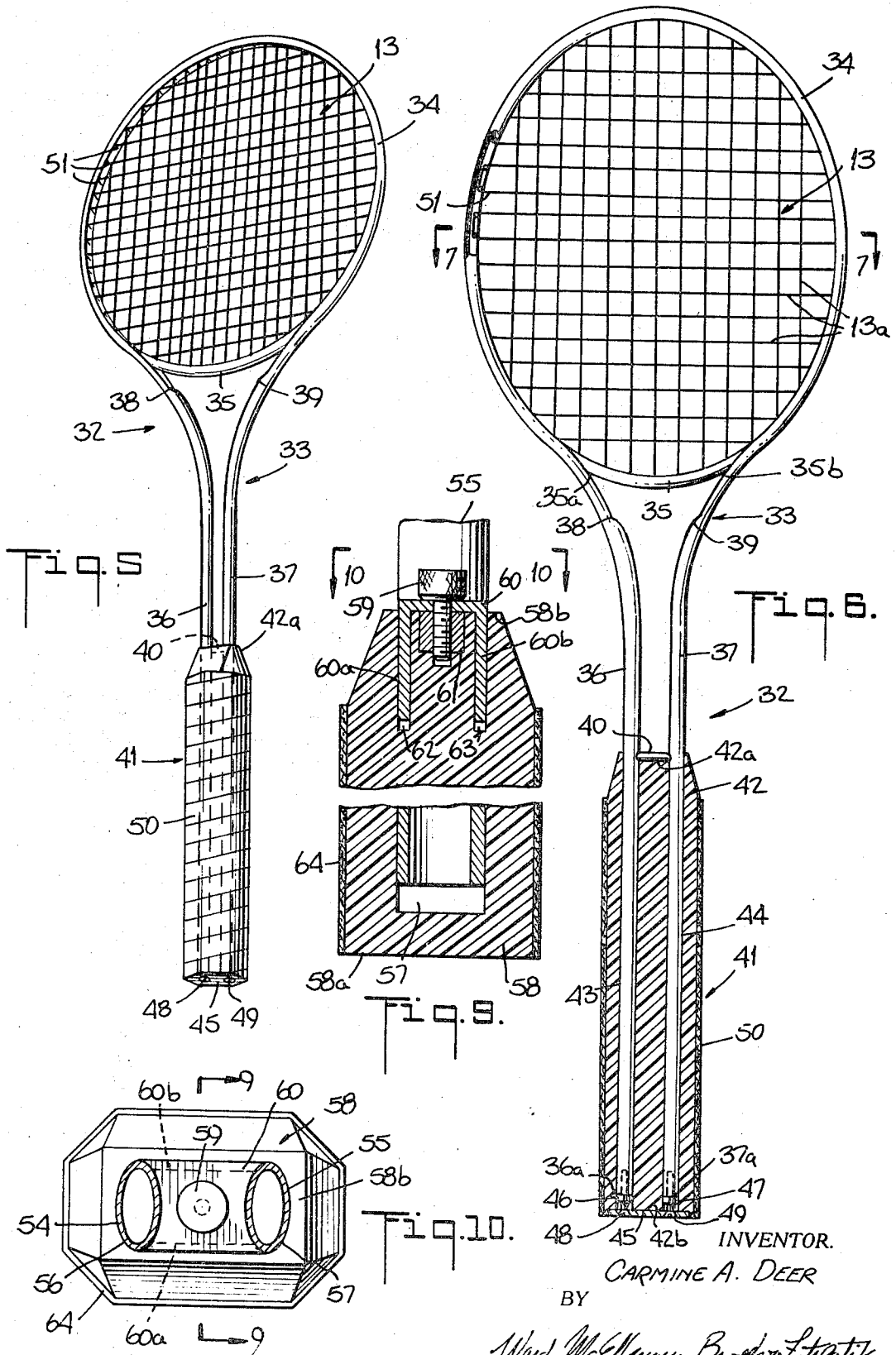


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RACKET FOR TENNIS OR SIMILAR GAMES

This invention relates to rackets used in playing tennis, badminton, squash and similar games and, more particularly, to the construction and fabrication of the frame and handle structure of such rackets.

A recent development in the art provides that the frames of such rackets be formed of metal tubing, rather than of wood, especially to reduce the surface area and, hence, the "drag" of the frame as the racket is swung through the air. Although in its broader aspects the invention may be useful in connection with the more conventional wood frame rackets, it was made and therefore will be described in connection with such open, or skeleton-type metal rackets.

The present invention provides a racket which incorporates improvements in both its frame and its handle such that the racket, as a whole, affords advantages from a commercial standpoint as well as in playing.

Difficulty has been experienced in providing the necessary string support on the frames of such metal rackets, and a wholly satisfactory frame construction in this respect has not heretofore been achieved. The several types of string supports which are known in connection with metal frame rackets, are either unsatisfactory or involve relatively complicated arrangements resulting in increased manufacturing time and expense. For example, where eyelets are formed through the metal frame for receiving the respective strands of the racket string, it is difficult to provide the proper number and spacing of such eyelets, particularly at the diagonal quadrant locations of the stringing zone, such that the racket may be strung in a conventional or simple manner. Moreover, where the string strands pass through such frame eyelets each strand is usually found to be in such tight friction engagement with a pair of eyelets that it functions independently of the other strands, so that the desired interdependency of the strands, which imparts a so-called "trampoline" effect to the racket strings as a whole, is lost. Thus, preferred previous arrangements do not include such stringing eyelets, but rather provide inclusion of a somewhat complicated, annularly disposed wire member which is secured to the frame by helical wire coils or the like and which has particular serrated configuration receiving the strands of the racket string. Such auxiliary string support means are relatively more expensive and time-consuming to install, and impart a rather crude, cluttered appearance to the finally assembled racket, yet remain somewhat unsatisfactory because the attachment coils project above the frame surface and are therefore a source of aerodynamic drag and possible interference with the ball during play and, in any event, subject to eventual breakage.

The present invention provides a racket having a frame which includes a novel racket string support structure which facilitates the stringing of the racket, and results in considerably reduced cost in the manufacture of the frame. The individual strand supports are permanently affixed to the frame, and are such as will avoid sharp bends of the string, as is known to be important towards long service life of the racket string. Moreover, the construction permits stringing of the racket in manner whereby the desired interdependence of the string-strands, i.e., the trampoline effect, is achieved. The strands at their locations of engagement with the strand supports are shielded by the frame against scraping and consequent breakage, and the referred to strand supports are themselves not exposed to possible damage, and cannot possibly interfere with the ball, during play. The outer periphery of the frame is completely smooth and devoid of projections or indentations, and the ultimately strung racket is very neat in appearance as compared with other rackets of the type.

It is further intended by the invention to provide such improved string-strand supports in a metal racket frame which has streamlined cross-sectional contour in the direction of the racket movement during play, such that the least possible drag due to air resistance will be experienced as the player swings the racket.

The invention further contemplates an improved handle construction in such rackets, which in addition to its intrinsic features is economical and especially suited to mass production and mass selling techniques. The handle member is conveniently attached to the metal frame, and is removable for replacement with another, possible different handle member. Such interchangeability of handle members facilitates the production, distribution and sale of such rackets because the metal frames may be standardized, yet the purchaser may at the time of his purchase select a handle member having size and weight which renders the racket as a whole most suitable to him. That is, for better racket balance or "feel," different players may prefer that the racket as a whole be somewhat longer, shorter, heavier, or lighter than is perhaps conventional, these characteristics being more significantly affected by the type of handle which is attached to the racket. Thus, since only one or two basic frames and a variety of different handles need be stocked by a merchant, the invention avoids the presently required handling of a variety of rackets having permanently attached handles for the purpose of affording a wide selection to the customer.

It is further intended that the construction of the racket be such that the number of operations required in its manufacture can be significantly reduced, and particular manufacturing operations simplified. Thus, the cost of manufacturing a racket frame in accordance with the invention is significantly less than that of known metal racket frames.

Briefly describing the invention, the racket has a frame made from an initially straight length of metal tubing which is grooved longitudinally along only that side which will form the inner periphery of the frame when the tubing is ultimately bent to conventional racket shape. The circular arc shape of the grooving together with the circular arc shape of the tubing provides a double circular arc airfoil shape of the frame, in cross section.

For mounting the racket string within the elliptical-shaped stringing area of the frame, a plurality of individual string-strand supports, each formed from metal rod, are brazed in place at appropriately spaced apart locations along that length of the grooved tubing which is later formed to such elliptical shape. These string-strand supports span transversely across the inner peripheral groove of the frame at their respective locations, each providing a bridgelike support for a strand of the nylon or other conventional racket string which will be passed therearound. Further, each strand support has what will be referred to as a crown-shape, formed by bending the rod of which it is made, to assure proper centering of the string-strand thereon, and the desired interdependence of adjacent strands, as will be described. The diameter of the rod from which each strand support is made is such that the strand is not subjected to inordinately sharp bending, as might otherwise present a point of weakness in the racket string.

The strand supports are attached to the frame using any of several techniques as will be described. Preferably, the respective ends of each strand support are brazed directly to the metal surface of the racket frame. Alternatively, a hole may be drilled into the racket frame at each strand support location for receiving a longer end of the strand support, which is then brazed in place as will be described. Still another alternative involves the provision of a series of transversely opposed pairs of grooves or depressions, of the tubing from which the racket frame is formed, at the respective locations along the frame length which will ultimately correspond with the string-strand supports. Each of these transversely disposed depression pairs is shallower than the referred to longitudinally extending groove of the tubing, and is for receiving the respective ends of the short length of round wire rod which forms the strand support.

After the thus grooved and outfitted tubing has been bent to the general shape of a conventional racket frame, an additional arcuately shaped piece of similarly grooved and outfitted tubing is brazed into place to complete the bottom end of the elliptical-shaped racket string area of the frame. As thus

formed, the frame includes parallel extending handle attachment portions, formed by the respective straight-length end portions of the tubing, to which the removable handle member of the racket will be attached.

To impart rigidity to the frame structure in the region along which the racket handle member will be attached, and thus to minimize the development of stresses on the contemplated plastic handle member, a flat metal stay element spans between and is brazed on to the otherwise free ends of the pair of handle attachment portions of the frame. The handle member, which is of one-piece molded plastic construction having conventional octagonal configuration and including a conventionally attached wound leather or other typical racket grip, is slidably mounted on the parallel extending handle attachment portions of the frame, the handle member having particular interior configuration for the purpose. The handle member is firmly attached to the frame by a pair of screws which engage respective threaded apertures of the referred to stay element, these screw apertures being located at the respective lower ends of the tubular handle attachment portions so that the ends of the screws are received within the latter. The top end of the handle seats against a transversely extending octagonal shaped frame spreader piece which is brazed between the handle attachment portions at a location spaced away from their respective ends.

In an alternative embodiment, each handle attachment portion has a threaded nut brazed on to its end to be respectively engaged by the pair of handle attachment screws, which pass through the heel of the handle member.

In another alternative embodiment, an inverted U-shaped, sheet metal spreader is brazed in place between the handle attachment portions of the frame, the legs of the U-shape being within the respective planes of the extreme edges of the frame tubing in the direction of their thickness spanning across the plane of the racket face, and the span of the U-shape being located for abutment by the top of the handle member when the latter is slidably mounted on the handle extensions of the frame. A bolt passing vertically through the span of the U-shape and threaded into the handle member firmly and removably anchors the latter, without need for the handle heel screw attachment as previously described.

The thus-formed racket frame is strung in conventional manner via the crown-shaped strand supports which extend transversely across the referred to longitudinal groove formed along the inner periphery of the elliptical-shaped stringing area of the frame. It will be found that the strands are firmly positioned by the respective supports, yet a minimum of frictional engagement is achieved between each strand and its support, so that the desired "trampoline" is achieved by the racket string as a whole.

These and other objects, features and advantages of the invention will become more fully apparent from the following detailed description thereof, when taken together with the accompanying drawings in which:

FIG. 1 is a front view, partially in cross section, of a tennis racket in accordance with the invention;

FIG. 2 is an enlarged sectional view as seen from line 2-2 of FIG. 1;

FIG. 3 is an enlarged fragmentary perspective view of the frame portion of the racket as seen for example from line 3-3 of FIG. 1;

FIG. 4 is a greatly enlarged sectional view of the frame portion of a racket in accordance with the invention;

FIG. 5 is a perspective view of a tennis racket incorporating modifications of the inventions;

FIG. 6 is an enlarged front view, partially in cross section, of the tennis racket shown in FIG. 5;

FIG. 7 is a greatly enlarged cross-sectional view as seen from line 7-7 of FIG. 6;

FIG. 8 is a fragmentary perspective illustration of the contemplated steps in fabricating the frame element of the racket shown in FIGS. 5 and 6;

FIG. 9 is a fragmentary side-sectional elevation, to an enlarged scale, illustrating an alternative removable handle construction as might be incorporated in the rackets of either FIGS. 1 or 6, the section being taken at line 9-9 of FIG. 10; and

FIG. 10 is a cross-sectional view as seen from line 10-10 of FIG. 9.

Referring first to FIG. 1, a tennis racket in accordance with the invention is generally indicated by reference numeral 11. The racket basically comprises a tubular metal frame 12, a conventional racket string 13, and a removable handle member 14.

The stainless steel or chrome plated carbon steel tubing of which the frame 12 is made has double circular arc airfoil shape in cross section, as indicated in FIGS. 2 and 3 along its entire length. The frame 12 includes a head end portion 15 which, including its bridge element 18, defines a racket stringing area; and a pair of parallel extending handle attachment portions 16, 17. The bridge element 18 has suitable elliptical-segment shape and is brazed in place as at 18a, 18b to complete the elliptical shape of the stringing area as shown. In cross section the tubular metal bridge element 18 also has the referred to double circular arc airfoil shape of the principal frame tubing.

The frame 12 further includes a spreader 19 which extends between the handle attachment portions 16 and 17 at a location spaced away from the ends 16a, 17a of the latter, and which is brazed in place as at 19a, 19b. The spreader 19 has octagonal shape conforming with that of the main body element 20 of the handle member 14, as indicated in FIG. 2, and is made of flat sheet metal. In addition, a flat sheet metal stay element 21 spans between, and is brazed on to the respective, otherwise free ends 16a, 17a of the handle attachment portions as shown in FIGS. 1 and 2. The stay 21 has a pair of threaded apertures 22, respectively located within the projected area of the ends of the handle attachment portions 16, 17 as shown in FIG. 2, for receiving the respective screws 23, 24 which removably attach the handle member 14 to the frame.

The handle member 14, which also includes a conventionally wound leather or plastic grip 25, is slidably mounted on the handle attachment portions 16, 17 its top end 14a being seated against the underside of the spreader 19. Its main body element 20 is made from any suitable plastic, such as molded or extruded acrylonitrile butadiene styrene, and has a hollow interior as seen in FIG. 2 both to reduce its weight and to provide clearance for the stay 21 as the handle is slid on to the frame. It will be noted that the hollow interior configuration includes symmetrically opposed and longitudinally extending arcuately shaped surfaces 26, 27 for conforming accommodation of the respective outwardly facing surfaces of the handle attachment portions 16 and 17, as well as inwardly facing, longitudinally extending respective projections 26a, 26b, 27a, 27b which engage respective inwardly facing surfaces of the handle attachment portions 16, 17 to insure that the handle member is snugly mounted thereon. The stay 21 is narrower than the distance between the projection pairs 26a, 26b and 27a, 27b for clearance during mounting of the handle. At its lower end, the hollow configuration is terminated short of the lower end of the handle body 20, as shown in FIG. 1. The handle 14 is firmly but removably attached to the handle attachment portions 16, 17 by the pair of screws 23, 24 which pass through appropriately located screw apertures (unnumbered) in the heel of the handle body 20, and thread into the apertures 22 of the stay element 21 as aforesaid. Thus, upon removal of the screws 23, 24, the handle may be conveniently removed and replaced by another handle member having different weight or size or other characteristics as may be preferred by the player. The screws 23, 24 may have long length for accommodating longer length handles as will be apparent; and the screw apertures of the handle are countersunk as shown for neat appearance.

The so-called "double circular arc" airfoil cross-sectional shape of the frame 12, including its bridge element 18, is conveniently formed by rolling an arcuate groove along one side of a length of nominally one-half inch diameter metal tubing. Referring to FIG. 4, the radius R_1 of the arcuate groove which will ultimately be disposed along the inner periphery of the frame is .141 inch, the depth of the groove being such that the thickness T of the resulting airfoil section is .200 inch. The resulting deformation of the initially circular tubing is such that the radius R_2 along the outer periphery of the frame is .344 inch, and that of each of the conjoining radii R_3 is .094 inch. As thus formed, the hollow tubular frame 12 has a depth D (measured perpendicularly to the plane of the stringing area) equal to .580 inch, and overall width W equal to .281 inch. The wall thickness t of the tubing used in making the preferred embodiment is .018 inch, although such thickness may be greater or less depending upon the ultimately desired overall weight of the frame.

Referring now to the manner of attachment of the nylon or gut racket string 13 within the elliptical stringing area of the frame 12, each strand 13a thereof is supported by an associated strand support 30 which is permanently attached at the appropriate location along the inner periphery of the frame. The number and variable spacing apart of all of the strand supports 30 correspond with the desired conventional spacing between adjacent strands of the racket string as generally indicated in FIG. 1, and it will be noted that the conventional stringing of the racket is facilitated especially at the quadrant locations by the construction and arrangement of each strand support 30 as will now be described.

Referring to FIGS. 3 and 4, each strand support 30 is formed from a suitable length of .093 inch diameter steel rod, the rod being crowned by bending on a radius R_4 (FIG. 4) of .047 inch to an included angle of 60° at the indicated appropriate location along its length. That is, the bend would be made midway along the nominally 5/16 inch length of rod which forms each strand support 30 of the preferred embodiment as illustrated in FIGS. 1 and 3, its respective ends then being brazed directly on to the surface of the frame 12 as indicated by brazing 31 in FIG. 3. However, where placement of such directly brazed strand supports would be difficult during manufacture, the rod from which each strand support is made may be nominally one-half inch long, and the bend made at a location approximately one-third along its length, thus providing a longer end portion 30a as well as a shorter end portion 30b of the strand support as shown in FIG. 4. As indicated, the longer end portion 30a is received in the frame through a drilled aperture 12a located adjacent to one side of the groove R_1 at the strand support location, and both end portions 30a, 30b are brazed as at 31 to the tubular frame 12. Thus, in either case as shown in FIGS. 3 and 4, the support spans transversely across the longitudinal groove R_1 with its crown centered at the midpoint of the depth D , and projecting inwardly with respect to the stringing area, as shown. The associated string strand 13a is threaded through the thus formed eyelet between the strand support and the bottom of the groove R_1 , as illustrated in FIG. 3. Each strand support along the frame, including those along the length of the bridge element 18, is similarly formed and attached.

The radius of curvature R_4 which forms the crowned configuration of each strand support is only slightly greater than that of a conventional racket string (e.g., .030 inch radius) such that the tightly strung strand of the racket string is firmly bottomed and centered beneath the support, yet the strand curves smoothly, rather than sharply therearound. Each support 30 is bent on the radius R_4 to an included angle of not greater than 90° , an angle of 60° as shown in FIG. 4 being preferred. The diameter of the rod from which the supports 30 are formed is appropriate to avoid the usual tendency of the string strands to wear or otherwise rupture at their support locations. Although not fully understood, it is believed that the improved "trampoline effect" exhibited by the strung racket during play may be due in part to a tendency of each racket

strand to ride up the incline of its associated strand support as the racket strikes the ball, whereupon the ball is given an additional springlike thrust away from the racket under the tendency of the resilient racket strands to snap back to their centered positions on their supports.

It will be noted that the strands are not exposed at the outer periphery of the frame 12, and are further protected against breakage by their somewhat nestled relation within the inner peripheral groove R_1 of the frame. Of course, the strung racket will have exceptionally neat overall appearance, as previously mentioned.

The aforementioned double circular arc airfoil shape of the frame 12 reduces frictional "drag" of the racket as it is swung through the air. In this connection, it will be noted that the overall frame width W is a minimum, which also contributes to the improved overall response of the racket during play.

Referring now to the alternative embodiment as shown in FIGS. 5—8, the tennis racket 32 which is there shown has a tubular metal frame 33 which similarly includes a head end portion 34 defining an elliptical shaped stringing area having double circular arc airfoil shape in cross section as in the previously described embodiment, including its bridge element 35 which is similarly brazed in place as at 35a, 35b. However, the handle attachment portions 36, 37 of the frame 12 are circular in cross section, the longitudinal groove along the inner periphery of the frame within the playing area 34 being terminated immediately below the bridge element 35. For better understanding, the respective end terminations of the groove are indicated by reference numerals 38 and 39.

A spreader 40 in the form of a metal rod is brazed in place between the handle attachment portions 36, 37 at a location which is spaced away from the respective bottom ends 36a, 37a thereof, as shown. The racket handle member 41 is slidably mounted on the handle attachment portions 36, 37, the upper end 42a of the handle body 42 being suitably recessed, as indicated in FIGS. 5 and 6, to receive the spreader 40 against which it abuts. The main body 42 of the handle which is made of a single piece of wood or of any suitable molded plastic, has a pair of parallel, circular-shaped, elongated apertures 43 and 44 for receiving the respective handle attachment portions 36, 37 as shown. The apertures 43 and 44 are drilled or otherwise formed completely through the length of the handle body 42, and the lower end 42b of the handle body is suitably recessed to receive a metal or plastic heel plate 45. Respective nuts 46, 47 are brazed on to the bottom ends 36a, 37a of the handle attachment portions 36, 37 for receiving the respective handle attachment screws 48, 49. The attachment screws 48, 49 pass through respective counter-sunk screw apertures (unnumbered) of the heel plate 45, and are threaded into the respective nuts 46, 47 to firmly mount the handle 41 on the racket frame 33. The threaded ends of the screws 48, 49 are received within the respective tubular hollows of the handle attachment portions 36, 37, and it will be understood that relatively long length screws may be used to accommodate handles of different lengths. Of course, the handle 41 further includes a conventionally wound leather or plastic grip 50, and the handle 41 has conventionally octagonal shape which is tapered at its upper end 42a as indicated in FIGS. 5 and 6.

The strands 13a of the racket string 13 respectively engage their associated strand supports 51 located along the inner periphery of the frame within the stringing area 34, the support locations being the same as in the previously described embodiment.

Referring to FIGS. 7 and 8, the strand supports 51 are formed of suitable lengths of the same .093 inch diameter steel rod as used in the FIG. 1 embodiment, each rod being crowned midway along its length by bending it to an included angle of 90° as shown, although an included angle of 60° as in the FIG. 1 embodiment is preferred. As in the case of the FIG. 1 embodiment, it is contemplated that the tubing which forms the frame 33 and its bridge element 35 will be longitudinally grooved appropriately along its length to provide its airfoil

shape while the tubing is in its initially straight-length form, before bending to conventional racket shape. However, and as illustrated in FIG. 8, commensurately with the forming of the longitudinal groove, respective longitudinally spaced apart and transversely oriented pairs of depressions 52 are formed in the tubing to receive the strand supports 51. As shown in FIG. 8, each of the pair of depressions 52 is situated on respectively opposite sides of the longitudinal grooving, and the crown 51a of each upright strand support 51 is aligned with the center line of the groove. The depressions 52 as well as the longitudinal groove are formed either by a rolling or a braking operation, and the strand supports 51 are then brazed in place as indicated at 51b. Thereafter, the tubing is bent to the racket frame shape as shown in FIG. 6, and the similarly preformed bridge element 35 is then brazed in place. The racket string is then conventionally strung on the strand supports 51, the bend radius of each strand support 51 being substantially equal to or only slightly greater than that of the racket strand 13a.

FIGS. 9 and 10 illustrate further modifications of the frame and handle as may be incorporated in a racket in accordance with the invention. That is, as shown in FIG. 10, the tubing at the handle attachment portions 54, 55 of the frame may have oval shape in cross section, rather than round shape as in the FIG. 6 embodiment, the respective apertures 56, 57 of the handle body 58 for receiving the same having similar cross-sectional shape. As illustrated in FIG. 9, the lower ends of the apertures 56 and 57 terminate short of the heel 58a of the handle body 58, and the handle is attached only at its upper end 58b to the racket frame. The handle attachment is by means of a knurled thumb screw 59 which passes through the frame spreader 60 and is threaded into a suitable metal insert 61 of the handle body 58. The spreader 60, which is brazed in place between the frame handle attachment portions 54, 55, is formed of sheet metal having inverted U-shape as shown. Its leg elements 60a, 60b, which are spaced apart a distance equal to the depth of the frame tubing as shown, are accommodated in appropriate vertically extending slots 62, 63 formed in the handle body 58. The handle body 58 is of molded plastic construction, so that the apertures 56, 57 and the slots 62, 63 are easily formed. The handle has conventional octagonal shape as shown in FIG. 10, and includes a suitable handle grip surface 64. Of course, although not illustrated, the handles illustrated in FIGS. 6 and 9 might be made hollow to reduce their weight.

Thus has been described a frame and handle construction for a tennis racket, including several modifications thereof, which achieves all of the objects of the invention.

I claim:

1. A racket for playing tennis or similar games, comprising a frame having a handle attachment portion, a head end portion presenting an inner peripheral surface which circumscribes and thereby defines a head end area wherein a racket string will be strung, and a plurality of individual racket string strand supports in spaced apart relation with respect to each other along the length of said inner peripheral surface, each said strand support comprising a rod extending transversely with respect to the direction of said length of the inner peripheral surface, said rod having respective opposite straight end portions attached to said inner peripheral surface and a distinct angular bend to an included angle of not greater than substantially 90° at a location between its said opposite end portions, said bend defining a crown facing inwardly with respect to said head end area and spaced away from said inner peripheral surface for receiving a strand of said racket string thereunder.

2. A racket according to claim 1 wherein said inner peripheral surface is grooved longitudinally along its length, each said rod has a longer straight end portion extending from one side of said crown and a shorter straight end portion extending from the other side of said crown, and said inner peripheral surface has means defining an aperture at one side of said longitudinal grooving for receiving said longer end portion of one said rods therethrough at each of said spaced-apart locations along the length of said inner peripheral surface, the

exposed length of said longer end portion of each said rod being substantially equal to the length of its said shorter end portion when said longer end portion is so received.

3. A racket according to claim 1 wherein said included angle is substantially 60°

4. A racket according to claim 1 which further comprises a racket string which is strung on and between said strand supports, and wherein said bend of each strand support to said included angle is on a radius which is equal to one-half or slightly greater than one-half the thickness of said racket string strand which passes thereunder.

5. A racket according to claim 4 wherein the diameter of each said strand support rod is substantially equal to twice said bend radius.

6. A racket according to claim 1 wherein said included angle is substantially 60°, said bend to said included angle is on a radius substantially equal to .047 inch, and the diameter of each said strand support rod is substantially equal to .093 inch.

7. A racket according to claim 1 wherein said included angle is substantially 90°.

8. A racket for playing tennis or similar games, comprising a tubular metal frame providing a head end portion and an integrally formed pair of parallel extending and laterally spaced-apart tubular handle attachment portions extending from said head end portion, a metal spreader attached between said handle attachment portions at a middle location along their lengths, a detachable handle member including a handle body having substantially one-piece construction slidably mounted on said handle attachment portions, said handle body having a top end which is seated against said spreader, and screw means effecting said detachable mounting of said handle member, at least said head end portion having a double circular arc airfoil cross-sectional configuration presenting a longitudinally grooved inner peripheral surface which circumscribes and thereby defines an area wherein a racket string will be strung, at least said head end portion further having a plurality of individual metal rods each spanning transversely across and brazed on to the opposite sides of said longitudinal grooving at spaced-apart locations with respect to each other along the length of said inner peripheral surface, each said rod having respective opposite straight end portions and a distinct angular bend at substantially the midpoint of its length which extends across said grooving, said bend having included angle of not greater than substantially 90° and providing a crown of said rod which faces inwardly with respect to said stringing area and is spaced away from said inner peripheral surface for receiving a strand of said racket string thereunder.

9. A racket according to claim 8 wherein said pair of handle attachment portions have respective lower end, and which further comprises a metal stay spanning between and brazed substantially to said lower ends of the handle attachment portions, said handle body having substantially hollow interior configuration providing opposed inwardly facing which slidably engage the respective outwardly facing surfaces of said pair of handle attachment portions, said handle body further including a substantially closed heel end, and said screw means passing through said heel end of the handle body and attaching the same to said metal stay.

10. A racket according to claim 9 wherein said handle body interior configuration further includes respective laterally inwardly projecting portions providing respective surfaces which slidably engage the respective inwardly facing surfaces of said pair of handle attachment portions.

11. A racket according to claim 8 wherein said spreader has substantially U-shaped configuration presenting respective leg portions attached between and extending in the direction of said lower ends of the handle attachment portions, said handle member having aperture means which slidably receive said spreader leg portions and said screw means comprises a thumb screw disposed between and extending parallel to said handle attachment portions, said thumb screw engaging and passing through said spreader and threadedly engaging said handle member.

12. A racket for playing tennis or similar games, comprising a frame having a handle attachment portion, a head end portion presenting an inner peripheral surface which circumscribes and thereby defines a head end area wherein a racket string will be strung, and a plurality of individual racket string strand supports in spaced-apart relation with respect to each other along the length of said inner peripheral surface, each said strand support comprising a rod extending transversely with respect to the direction of said length of the inner peripheral surface, said rod having respective opposite straight end portions attached to said inner peripheral surface and a distinct angular bend at a location between its said opposite end portions, said bend defining a crown facing inwardly with respect to said head end area and spaced away from said inner peripheral surface for receiving a strand of said racket string thereunder, the inner surface of said bend including an arcuate segment having a radius slightly greater than substantially .030 inch.

13. A racket for playing tennis or similar games, comprising a frame having a handle attachment portion, a head end por-

tion presenting an inner peripheral surface which circumscribes and thereby defines a head end area for receiving a racket string, a plurality of individual racket string strand supports in spaced apart relation with respect to each other along the length of said inner peripheral surface, each said strand support comprising a rod extending transversely with respect to the direction of said length of the inner peripheral surface, said rod having respective opposite straight end portions attached to said inner peripheral surface and a distinct angular bend at a location between its said opposite end portions, and a racket string which is strung on and between said strand supports, said bend of each strand support defining a crown facing inwardly with respect to said head end area and spaced away from said inner peripheral surface for receiving a strand of said racket string thereunder, the inner surface of said bend including an arcuate segment having a radius which is equal to one-half or slightly greater than one-half the thickness of said racket string strand which passes thereunder.

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