

[54] **GAME RACKET**

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[51] Int. Cl. **A63b 49/08**

[58] Field of Search **273/67 R, 68, 73 R, 73 C, 273/73 E, 73 H, 73 J, 73 G, 75, 80 R, 80 D, 81 R, 82 R; 145/61 R; 74/551.9**

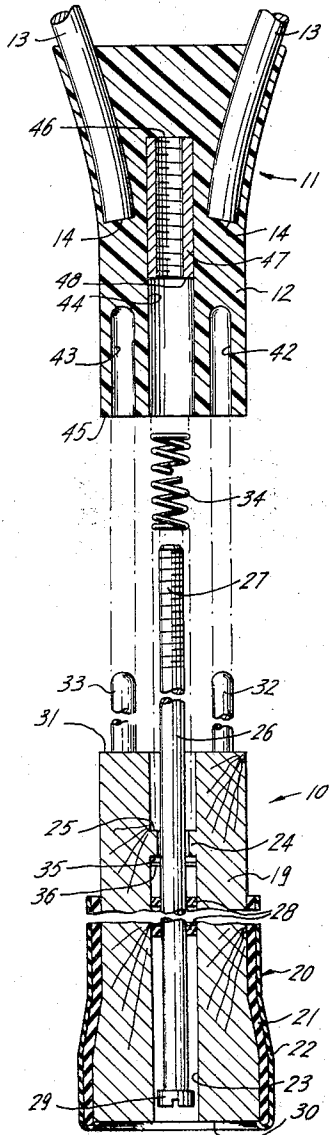
[56] **References Cited**

UNITED STATES PATENTS

814,257	3/1906	Wilson	273/82 R
1,020,018	3/1912	Bonin	273/80.7 UX
2,275,330	3/1942	Tveten	273/81 R X
2,576,751	11/1951	Dortmund	273/73 J UX
3,372,932	3/1968	Molis	273/81 R X
3,540,728	11/1970	Palmer	273/73 J

FOREIGN PATENTS OR APPLICATIONS

325,427	2/1930	Great Britain	273/73 G
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1,310,470	10/1962	France	273/73 F
233,544	5/1925	Great Britain	273/73 E
710,625	6/1954	Great Britain	273/73 J

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[57] **ABSTRACT**

A racket for use in games such as tennis, badminton, squash, paddle ball, etc. having a head and a handle detachably connected to said head at a throat. The head comprises a frame defining a stringing or ball contact area and a throat connected with the frame. The handle has at least one partially threaded bolt axially extending the length of said handle, with the threaded portion extending beyond one end thereof. An internally threaded insert in carried by said throat for receiving the bolt so that the handle may be secured to and detached from the head. Guide means are provided on the handle for engagement with the throat so that the handle will be properly aligned with the head. Grip expanding means may be carried within a partially hollow handle so as to vary the diameter of the handle.

15 Claims, 9 Drawing Figures

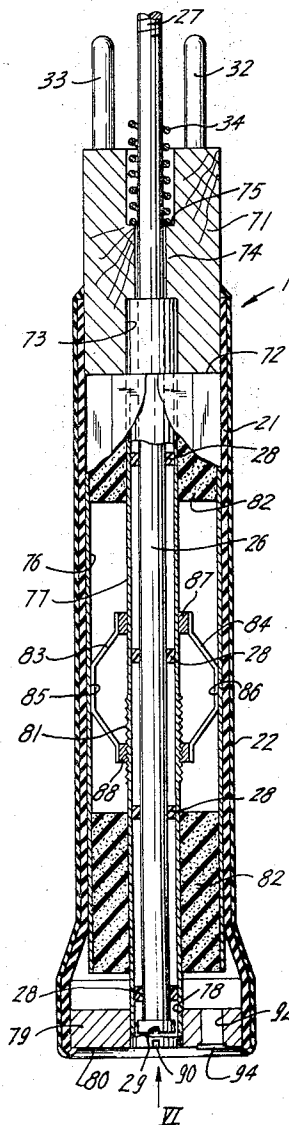


FIG. 1

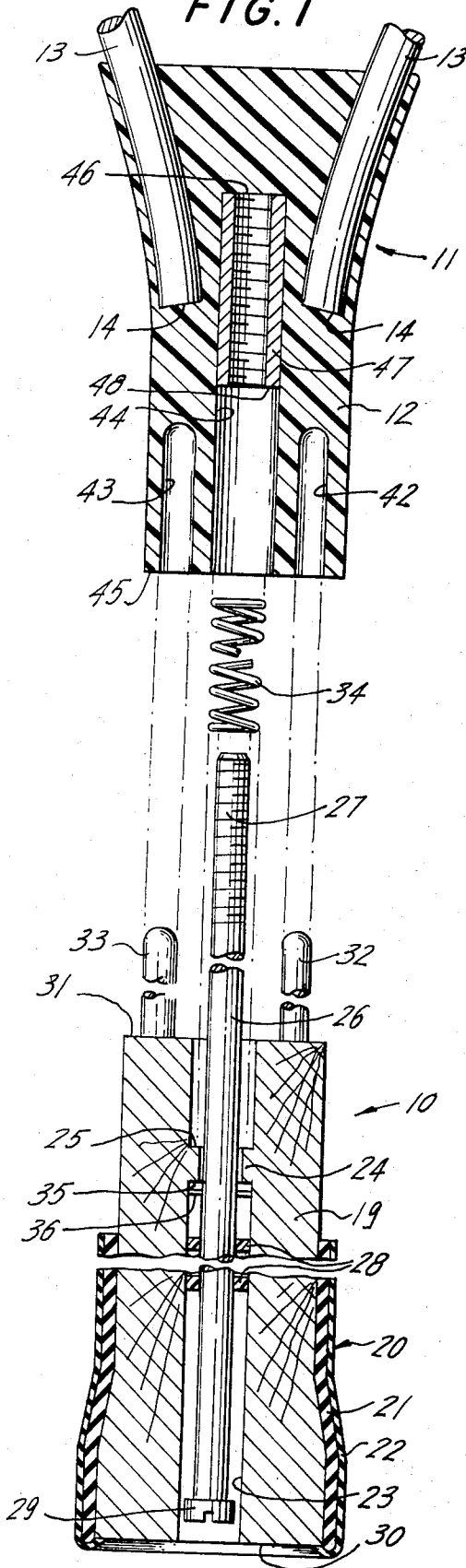
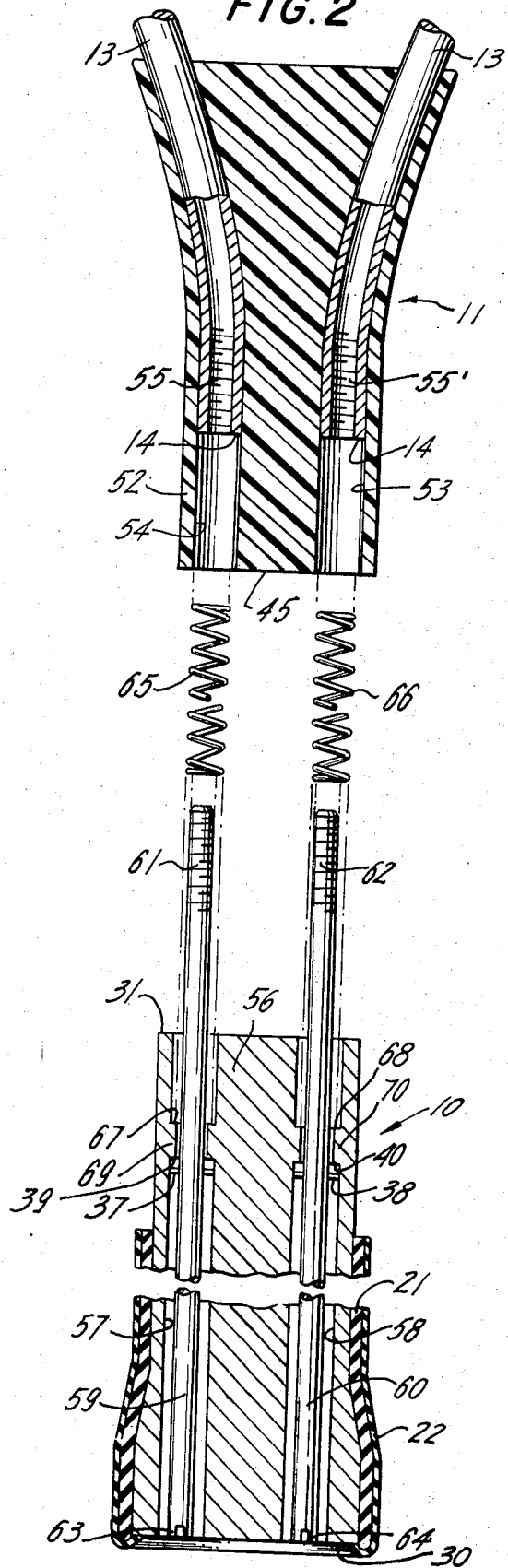


FIG. 2



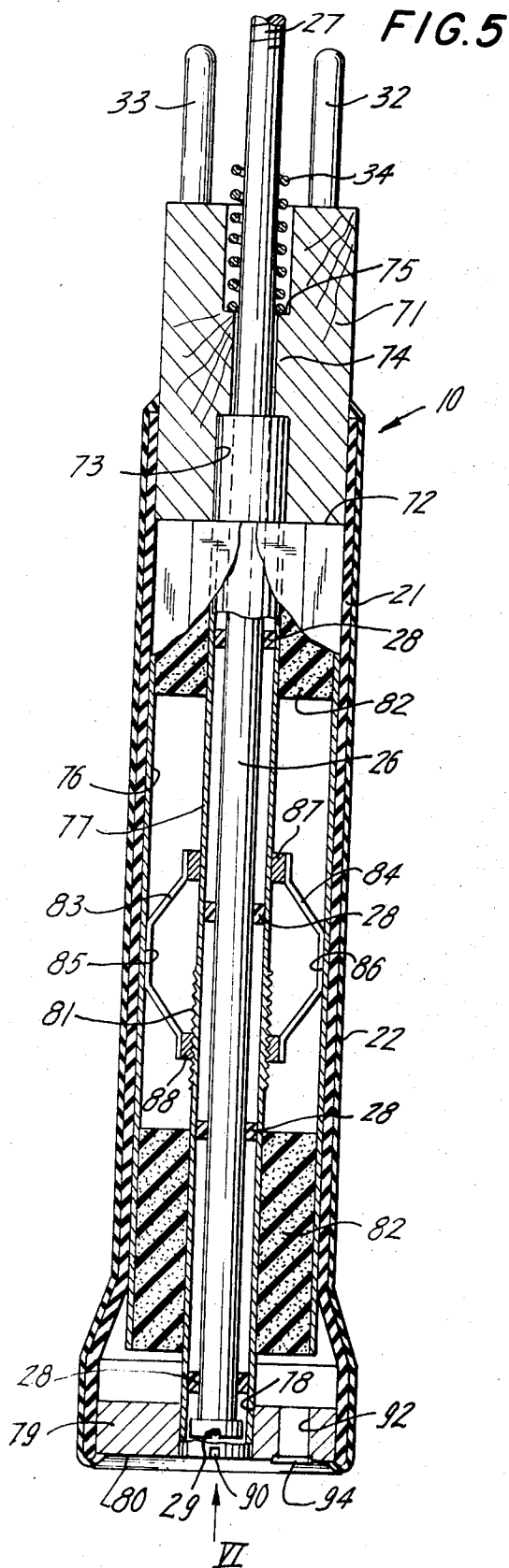
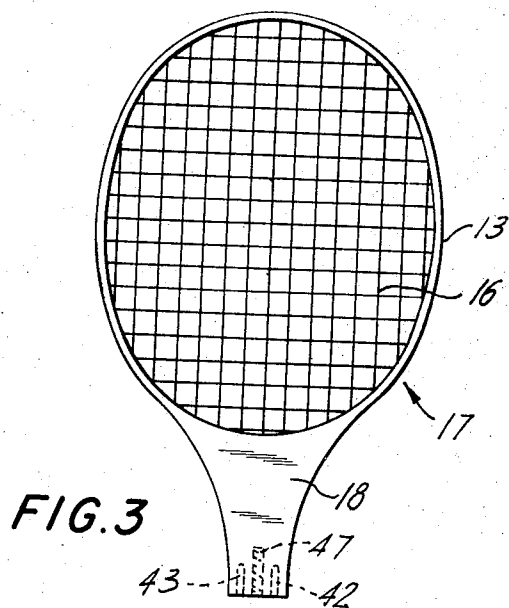
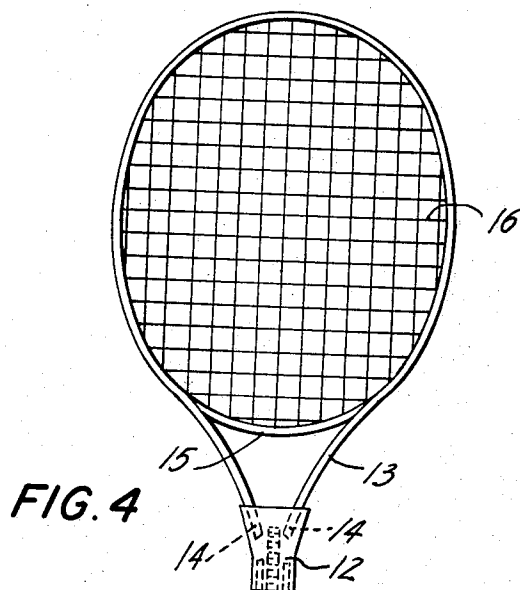
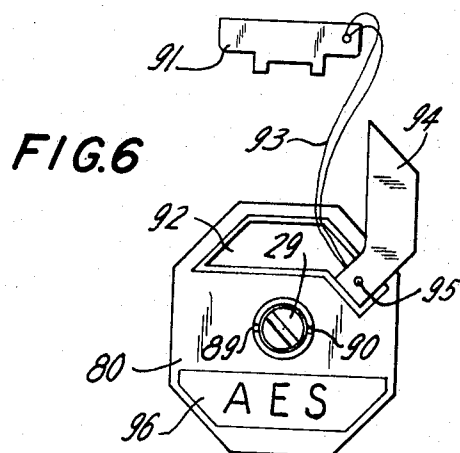


FIG. 7

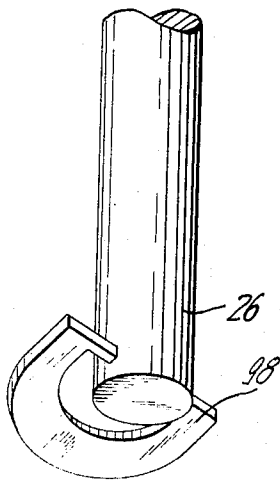


FIG. 8

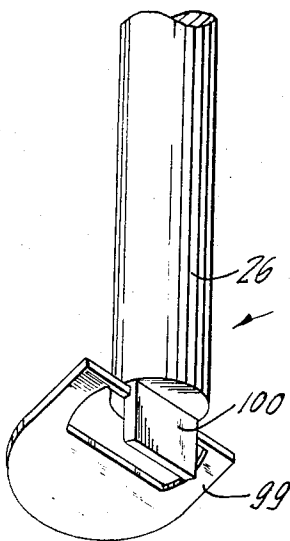
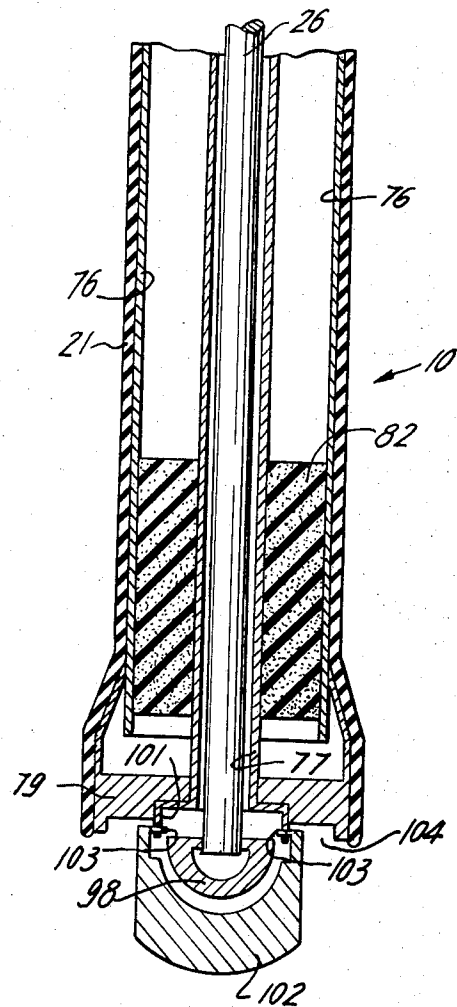


FIG. 9



GAME RACKET

BACKGROUND OF THE INVENTION

The present invention relates generally to a racket for use in playing such games as tennis, badminton, squash, paddle ball and other such similar games employing the use of a racket which is generally constructed having a frame or head portion connected at a neck or throat to a handle or grip portion. Specifically, the present invention is directed to such a racket in which the handle is detachably connected to the frame or head so that the racket may be rendered hybrid.

Over the years rackets for use in such games specifically in the game of tennis have been made of a variety of materials so as to provide certain advantages in playing the game. The widely used and well-known wooden racket is typically formed with the head and handle portion integral. The handle is formed of a shank extending from the head. The actual grip of the handle or grip portion is usually a thickened section of the shank having a hand-gripping cover such as leather or rubber wrapped about the thickened handle. The wooden racket presents several disadvantages to the user. These include possible warping of the frame and breaking the racket at the neck area or about the frame.

In order to overcome the disadvantages of the wooden racket the modern day metal racket was developed. These rackets are typically made of aluminum, aluminum alloys, steel, etc., and provide the required durability and tend to be lighter in weight than the wooden racket. The new metal rackets have met with significant commercial success — however these, like the wooden rackets, are typically constructed with the head and handle portions being integrally formed from a frame having an extended shank. The actual grip of the handle may be formed by a built-up area on the shank to form a thickened portion similar to the thickened portion of the well-known wooden racket.

In any case, whether the racket be made of wood or whether it be made of a metal, metal alloy, or any other material, the grip portion is formed integrally with the entire racket. Should a player decide to alter the type of grip which he chooses to use or to change the size of the grip or its weight, he would be required to obtain an entirely new racket at considerable expense, rather than simply a new grip. Further, in marketing the typical integral tennis racket an enormous stock of rackets, having different size grips, type of grips, lengths, etc. has to be maintained by the sporting goods supplier so that the purchaser may have his choice of grip.

Many people prefer the wooden frame racket, or may wish to play with a wooden racket only temporarily. They are required to purchase an entirely new racket. The change to a wooden racket also requires that the player become accustomed to a new grip which is an integral part of the new racket.

The player may purchase a new racket for a variety of reasons. Tennis rackets are provided with strings carried by the frame or head portions which are usually either gut or nylon. Both of these materials provide certain advantages under different playing conditions and a player for one reason or other may decide to play with nylon under one set of conditions while choosing to play with the gut stringing under another set of conditions. In order to satisfy this particular player's needs

he would have to be supplied with two entirely separate tennis rackets, each having the different stringing material. Again this is a situation which requires the player to become accustomed to using a different grip with each tennis racket. A tennis player may also choose to purchase a new racket simply because the head portion of his racket has become seriously damaged and requires replacement. Again, a new tennis racket with a new grip will be required.

The size, weight distribution, "feel" and overall adaptability to a player's peculiar hand of a particular grip becomes a factor upon which a player becomes accustomed and relies on. Any change or alteration in these factors tends to require a period of adjustment. It is therefore most desirable if a player can rely on the security of a particular grip and the knowledge that he can use "his" grip no matter what type of head he chooses to use.

For these reasons, tennis rackets having a detachable grip or handle portion, in order to provide an interchangeability feature have been proposed so that a single grip can be used with a variety of head or frame portions. This would allow a merchant to stock a wide variety of grips to meet the various size and weight needs while only one or two basic frames which may be used with the grip need be stocked. The prior attempts at tennis rackets having interchangeable grips however, does not appear to have met with any appreciable commercial success. Probable reasons for such failure appears to be the fact that the interchangeability feature is specifically limited to changing the type of grip which is used on a particular tennis racket rather than changing the type of head or frame portion which may be used with a particular grip. In the prior devices the frame or head portion is still made integral with an extended shank portion even though the actual grip which may be attached to the shank is interchangeable with other size grips. The merchant is still required to stock a large supply of handle or grip portions. This approach overlooked the desirability of providing a variety of head portions made of various materials such as the well-known wood or metal rackets so as to be interchangeable with the particular grip. Further, various head portions being strung with different materials, whether it be gut, nylon, or metal, can also be provided for use with a particular grip. Also, if a player should require or desire to play with a grip having a different size he would have to turn to an entirely new grip or handle having the required size.

Accordingly, it is a general object of the present invention to provide a racket for use in playing such games as tennis, badminton, squash, paddle ball, etc. in which the grip or handle portion is detachable from the frame or head portion at the throat or neck area of the racket thus providing an interchangeability feature.

Another object of the invention is to provide such a racket so that handles having different lengths may be used with the same head for use by children, adolescents or adults.

It is a further object of the present invention to provide a tennis racket of the aforementioned type in which a hybrid tennis racket having a head portion made of one type of material may be combined with a grip or handle portion made of a different type of material so as to provide the various advantages of each.

It is still a further object of the present invention to provide a racket having a detachable handle in which

the means for attaching the handle to the head portion provides rigidity and firmness of structure between the handle and frame and proper alignment between these elements.

A still further object of the present invention is to provide such a tennis racket in which the throat portion of the racket provides an interface and connecting element between the head and handle portions.

A further object is to include an extended screw element running the length of the grip or handle for providing a means of secure attachment between the handle and the head portion.

Another object of the invention is to provide a tennis racket which has means for varying the size of the actual grip so that a player may continue using the same grip but altering its size to suit his or another's need.

Other objects, advantages and features of the invention will become more apparent from the following detailed description of the invention in connection with the accompanying drawings in which:

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is an exploded and sectioned elevational view of one embodiment of the present invention;

FIG. 2 is also an exploded and sectioned elevational view showing another embodiment of the present invention;

FIG. 3 is a plan view of one type of tennis frame which may be used with the detachable handle shown in FIG. 1;

FIG. 4 is a plan view of another type of tennis frame and throat which may be used with the detachable handle shown in FIG. 1 or FIG. 2;

FIG. 5 is an elevational view partly broken away and sectioned showing a further feature of the invention;

FIG. 6 is a bottom view of the handle shown in FIG. 5 as viewed in the direction of arrow VI;

FIGS. 7 and 8 are perspective views of alternative features of the invention; and

FIG. 9 is a sectioned elevational view showing an alternative to one of the features shown in FIG. 5.

DESCRIPTION OF THE INVENTION

Referring now more in detail to the accompanying drawings, FIG. 1 shows in an exploded view one embodiment of a hybrid tennis racket as envisioned by the present invention. The combination racket includes basically two components, to wit a handle portion 10 and a head portion 11. The head 11, an example of which is shown in FIG. 4 is formed of a throat 12 and a frame 13. The frame 13 may be made of aluminum, steel, chrome, or other lightweight metal circularly or elliptically shaped terminating in the throat 12 at ends 14, and having a bridge element 15 so as to complete the uniform shape of the head which generally defines a stringing area. The strings 16 are supported by the frame in any of a variety of well-known manners, none of which form part of the present invention. The strings 16 may be either the well-known nylon, gut or metal.

The frame 13 may further be constructed of plastic, fiberglass, wood or any other material which is found suitable for meeting the durability and response requirements of playing the game in which the racket is to be used. The throat portion 12, which may be either formed integrally with the frame as shown in FIG. 3, or separately secured to the frame 13 as shown in FIG. 4

may likewise be made of any suitable material. It is suggested however, that one most suitable combination is to form the throat 12 of a molded plastic in which the frame 13, preferably made of metal tubing is secured to the throat during the molding process. FIG. 1 shows the throat 12 as being plastic, fiberglass or other synthetic material with the frame 13 embedded within the molded throat. The head shown in FIGS. 1 and 4 therefore provides the player with all of the advantages of the successful metal racket in which the frame 13 is formed of suitable metal tubing. When a player decides to use such a metal racket this type of head is available. FIG. 3, on the other hand, shows a head portion 17 formed completely of wood having a wooden frame 13 and an integrally formed wooden throat 18.

Either of the head portions, such as shown in FIGS. 3 and 4, may be used with the separate handle 10 such as shown in FIG. 1. The handle may also be made of a variety of metals. The handle shown in FIG. 1 is shown to be made of wood so as to provide the damping advantages inherent in this material. The handle 10 generally comprises the handle body 19 and a grip area 20. As previously noted, the body shown in FIG. 1 is made of wood. A conventional leather, plastic or rubber grip 21 is wound about the grip area of the body and may be covered with a reusable and disposable plastic or polyethylene covering 22 so as to protect the actual grip material.

In FIG. 1, the handle body 19 has an axially extending central bore 23 extending the entire length of the handle body. A necked-down portion 24 forming shoulders 25 and 35 is located in the upper part of the bore 23. A bolt 26 having a partially threaded portion 27 is carried within the bore 23 and may be journaled between bearings 28 which are preferably Teflon O-rings having a square cross-sectional area. The end of the bolt 26 which is remote from the threaded portion 27 has a slotted head 29 which is located near the base 30 of the handle body. The head 29 is slightly recessed into the bore 23 so as not to protrude beyond the base of the handle. A flange (or pin) 36 is carried on the bolt for locating the bolt within the bore preventing axial movement in a direction away from the head of the bolt by engagement with shoulder 35. End face 31 of the handle body is provided with a pair of guide pins 32 and 33. One of the guide pins 32 may have a somewhat smaller diameter than the other guide pin 33 for proper alignment into the throat portion 12 of the head 11. A tension spring 34 is helically wound about the bolt 26 and bears at one end thereof against a shoulder 25 formed by necked-down area 24. The guide pins 32 and 33 may be conveniently secured to the handle body preferably by screwing in place.

The throat 12 of the head portion is provided with a pair of guide slots 42 and 43 so as to receive the guide pins 32 and 33 of the handle. Guide slot 42 has a diameter slightly less than guide slot 43 so as to accommodate guide pin 32 and guide slot 43 having a diameter for receiving guide pin 33. In this manner the head and handle portions can be secured to one another with proper and consistent alignment so that the opposite faces of the head will always be aligned with corresponding parts of the handle.

A partial bore 44 extends from the base 45 of the throat terminating at 46 located approximately two-thirds of the depth of the throat. The bore 44 is axially and centrally located and is aligned with bore 23 of the

handle when the handle is secured to the throat. An internally threaded metal insert 47 is secured at the end of the partial bore 44 for receiving the threaded end 27 of bolt 26. The insert 47 may be secured in place within the partial bore as by wedging or during the molding process of the throat. Partial bore 44 and guide slots 42, 43 may either be formed during molding or by a machining operation subsequent to molding.

In operation, in order to secure the handle 10 to the head 11, bolt 26 is inserted into partial bore 44 of the throat, guide pins 32 and 33 being aligned so as to be inserted into guide slots 42 and 43 respectively. Threaded portion 27 is then screwed into insert 47 by turning the bolt 26 by means of a tool applied to the slotted end 29 at the base of the handle. Alternative means for causing rotation of the bolt may be carried by the bolt itself. FIG. 7 shows such a means as comprising bolt removal key 98 pivotally carried at the end of bolt 26. When not in use the key may be recessed within bore 23. The end of the bolt 26 may also have a tab area 100 as shown in FIG. 8 so as to carry a key 99 of the type shown in FIG. 8.

The other end of spring 34 bears against end 48 of insert 47 so as to provide proper tension between the throat and the handle and so as to urge the handle 10 away from the throat 12 thereby facilitating the disassembling operation, and together with the pins and slots, to provide proper rigidity and firmness of structure. Disassembly is accomplished by unscrewing the bolt from the insert 47 by means of applying the same tool to the slotted end 29 of the bolt. The bolt 26 is screwed into the insert 47 until base 45 of throat 12 and end face 31 interface in a smooth transition. The bolt 26 and guide pins 32 and 33 are sufficiently long so as to provide adequate stability between the head and handle body. The exact length of these elements and the degree of depth of insertion is determined by the relative size of the throat portion and may vary between one and three inches.

A truly hybrid tennis racket is formed by attaching the handle 10 as shown in FIG. 1 to the head 11. The handle 10 being made of wood provides all the advantages of a wooden racket while all the advantages of a metal frame as provided by the head 11 are combined with it. Any number of other combinations of hybrid tennis rackets are also obtainable in this manner. For example, the wooden handle 10 may be combined with a totally wooden frame 17 such as shown in FIG. 3. The throat area 18 of the wooden frame 17 will similarly have a metal insert 47 located in the partial bore 44 for receiving the threaded end 27 of bolt 26, guide slots 42 and 43 provided in the throat 18 of the wooden frame for receiving the guide pins 32, 33.

A further embodiment of the hybrid tennis racket is shown in FIG. 2. In this embodiment, the throat portion 52 has two guide slots 53 and 54 which are aligned with the ends 14 of the metal tubular frame 13 of the head 11. The ends 14 of frame 13 are internally threaded at 55 and 55' as shown in FIG. 2. Alternatively internal threaded metal inserts may be carried at the ends 14 of the tubular frame 13 as in the embodiment of FIG. 1. The metal inserts may be secured in place by press fitting or by set screws which may be provided on an outside surface of the tubular frame 13 at the ends 14 and secured so as to secure the metal inserts in place prior to molding the throat 52 with the ends of the frame embedded in the throat.

The handle 10 for use with the head 11 shown in FIG. 2 comprises a handle body 56 which may be made of wood, as is shown in FIG. 1, or may be made of metal such as cast aluminum or magnesium as shown in FIG. 2. Axial bores 57 and 58 are provided in the handle body 56 and accommodate bolts 59 and 60 respectively. Bolts 59 and 60 have partially threaded ends 61 and 62 respectively arranged for engagement with internally threaded ends 55 and 55' or inserts carried by the tubular metal frame 13. Bolts 59 and 60 have slotted ends 63 and 64 respectively at the base 30 of the handle which may be either slightly recessed at the base or arranged flush therewith as shown in FIG. 2. The key and bolt arrangements shown in FIGS. 7 or 8 may be used with bolts 59 and 60 instead of slots 63 and 64 respectively. Springs 65 and 66 are carried by the ends of the bolts 59 and 60 respectively and act at one end thereof against shoulders 67 and 68 respectively provided by necked-down area 69 and 70 within bores 57 and 58 respectively. Bolts 59 and 60 carry flanges 37 and 38 respectively which engage shoulders 39 and 40 respectively of necked-down areas 69 and 70 respectively to prevent axial removal of the bolts when the handle is secured to the head.

During assembly the threaded ends of bolts 59 and 60 are inserted into guide slots 54 and 53 and secured in metal inserts 55 of the tubular frame 13 by turning the bolts 59 and 60 at the slotted ends 63 and 64 or by keys 98 or 99. In this manner a secure connection of the handle to the head is accomplished by direct securement of the bolts through the handle to the frame 13. The bolts are screwed into the inserts until base 45 of the throat 52 and end face 31 of the handle body 56 interface in a smooth transition.

A further advantageous feature of the present invention is to provide the handle 10 with an expandable grip so that a single grip can be used for different players who are accustomed to different sized grips or may be used by the same player who wishes to vary the size of his grip. In FIG. 5 there is shown a handle 10 of the type shown in FIG. 1 having a body portion 71 which is solid up to body base 72 and is provided with an axial central bore 73 which has a necked-down portion 74 forming a shoulder 75 against which spring 34 bears. The remainder of the handle 10 extending from the base of body 71 to the base of the handle 80 is substantially hollow enclosed by movable wall plates 76 which may either form a cylinder so that the handle has a circular cross-section or may be formed into the familiar octagonal cross-section of the typical tennis racket handle. A hollow metal sleeve 77 is centrally and axially arranged through the handle 10 accommodated within the bore 73 of body 71 and in a bore 78 of base insert 79. The sleeve 77 has an externally threaded portion 81. The bolt 26 having a partially threaded end section 27 is carried within the sleeve 77 journaled between the teflon O-ring bearings 28 as described with reference to FIG. 1. In the embodiment shown in FIG. 5 there are four such O-rings rather than two as shown in FIG. 1. In order to provide rigidity and further substance to the hollow handle portion, foam or sponge rubber packing 82 is provided. An expander assembly is carried on the threaded portion of the sleeve 77 for varying the external diameter of the grip. The assembly comprises at least two flex elements 83 and 84 secured such as by riveting or spot welding at 85 and 86 respectively to the wall plates 76. The flex elements are pref-

erably made of spring steel and are connected at one end to a slide ring 87 arranged for sliding movement over the sleeve 77, and at their other end to an internally threaded ring 88 which is in engagement with the external threads 81 carried by sleeve 77.

The sleeve 77 is provided with means for causing rotation thereof. One such means is shown in FIG. 5 with the sleeve having diametrically opposed slots 89 and 90 located at the end of the sleeve adjacent base 80 of the handle. Rotation of the sleeve 77 can be effected by use of a tool such as 91 shown in FIG. 6 designed for engagement with slots 89 and 90. Another means for causing rotation of sleeve 77 is shown in FIG. 9. The sleeve 77 has an enlarged diameter portion 101 and an adjustment key 102 carried thereon by pins 103. The base body member 79 is provided with recess 104 in which the key 102 may be stored when not in use. The bolt 26 may also be provided with key 98.

Upon rotation of the sleeve 77, threaded ring 88 will be caused to be axially moved along sleeve 77 by engagement with threads 81 thereby causing the flex elements to be either pulled together or spread apart depending upon the direction of rotation of the sleeve (i.e. rings 87 and 88 moved away from or toward each other). Upon spreading of the flex elements 83 and 84 (i.e. rings 87 and 88 moving toward each other) wall plate 76 will be caused to expand thus enlarging the overall diameter of the grip.

FIG. 6 shows the bottom of the handle 10 of FIG. 5 in which a separate tool is used for adjustment instead of the keys shown in FIG. 9. The slotted head 29 of bolt 26 is accessible through bore 78 of base body member 79. Slots 89 and 90 are likewise accessible through bore 78. Tool 91 may be accommodated within an aperture 92 and secured to the base by a flexible laniard 93. The aperture 92 may be closed by cover 94 pivotably connected to the base 80 at 95. A name plate identification tag 96 may also be accommodated on the base 80.

The grip of the handle 10 of FIG. 5 may be provided with the rubber covering 21 as in FIGS. 1 and 2 as well as with the cover 22.

It should be apparent from the foregoing that a useful and novel hybrid tennis racket is provided by the present invention in which a head portion may be securely connected to a detachable handle portion permitting the use of a head formed of one material with a handle formed of a different material and which may further include a means for varying the size of the grip.

While the invention has been described and illustrated with respect to certain embodiments which give satisfactory results, it will be understood by those skilled in the art, after understanding the purpose of the invention that various other changes and modifications may be made without departing from the spirit and scope of the invention, and it is therefore intended in the appended claims to cover all such changes and modifications.

What we claim is:

1. A game racket comprising a head portion and a handle portion, said head comprising a frame and throat connected to said frame for joining said handle portion to said head portion, said handle portion comprising a base and an end face, at least one bolt being partially threaded at one end thereof and extending the entire length of said handle, said threaded end extending beyond said end face, and means for causing rota-

tional movement of said bolt, means carried by said throat for receiving said threaded bolt so that said handle may be securely attached to said head portion when said bolt is rotated in one direction and detached therefrom when said bolt is rotated in the opposite direction.

2. The game racket according to claim 1 further comprising guide means for properly aligning said handle with said throat and for providing rigidity and firmness of structure between said head and handle, said guide means comprising at least one guide pin axially extending from said handle and a guide slot in said throat for receiving said guide pin.

3. A game racket comprising: a head and a handle detachably connected to said head; said head comprising a frame defining a stringing area so that the strings are supported by said frame, and a throat connected to said frame for detachably connecting said handle to said head; said handle comprising an end face and a base, a body portion between said end face and said base, at least one axially extending bore through said body portion, a bolt at least partially threaded and rotatably carried within said bore, said bolt extending the length of said handle and having means at one end located adjacent said base for rotating said bolt, said threaded portion of said bolt extending beyond said end face, and guide means extending from said end face for aligning said handle with said head, said throat comprising a throat body having a base, an internally threaded insert carried within said throat body for receiving said threaded bolt so that said handle may be secured to said head upon rotation of said bolt in one direction and so that said handle may be detached from said head upon rotation of said bolt in the opposite direction, and guide slots extending into said body of said throat for receiving said guide means.

4. The game racket according to claim 3 further comprising a necked-down portion within said bore forming a shoulder, and means for urging said handle and head to separate comprising a spring helically wound about said bolt acting at one end thereof against said shoulder of said necked-down portion and at its other end against said throat, and means providing rigidity and firmness of structure between said head and handle.

5. The game racket according to claim 4 further comprising means for rotatably journalling said bolt within said bore.

6. The game racket according to claim 5 wherein said guide means and said means providing rigidity and firmness of structure are pins axially extending from said handle, one of said guide pins and one of said guide slots being larger than the other so that said handle and said head will be properly aligned.

7. The game racket according to claim 6 wherein said insert for receiving said bolt is carried in a partial bore extending from the base of the throat into said body.

8. The game racket according to claim 3 wherein said head and throat are integral with each other.

9. The game racket according to claim 8 wherein said integral head and throat construction is made of wood.

10. The game racket according to claim 3 wherein said frame is metal and said throat is molded synthetic material, said throat being molded about the ends of said frame so that said frame and throat are securely held together.

11. The game racket according to claim 5 further comprising two bores axially extending through said body portion, necked-down area in each of said bores defining a shoulder, an externally threaded bolt rotatably journaled in each of said bores, and two internally threaded inserts carried within said throat for receiving said bolts so as to secure said handle to said head.

12. A game racket comprising a head and a partially hollow handle detachably connected to said head, said handle having a grip portion, a threaded bolt carried by said handle axially extending beyond one end thereof, means carried by said head for receiving said threaded bolt so that said handle may be secured to said head, wall plates supporting the external structure of said partially hollow portion of said handle, and adjustable means carried within said handle for varying the outside diameter of said grip portion.

13. The game racket according to claim 12 wherein said mechanism comprises an externally partially threaded sleeve centrally located within said handle and axially extending therethrough, an expander assembly carried on the threaded portion of said sleeve and in contact with said wall plates, and means for rotating said sleeve so that said expander assembly will apply pressure to said wall varying the diameter of said grip.

14. The game racket according to claim 13 wherein said means for rotating said sleeve comprises at least one slot at one end thereof, and a tool for engagement with said slot.

15. The game racket according to claim 13 wherein said means for rotating said sleeve comprises a key pivotally carried at one end of said sleeve.

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