

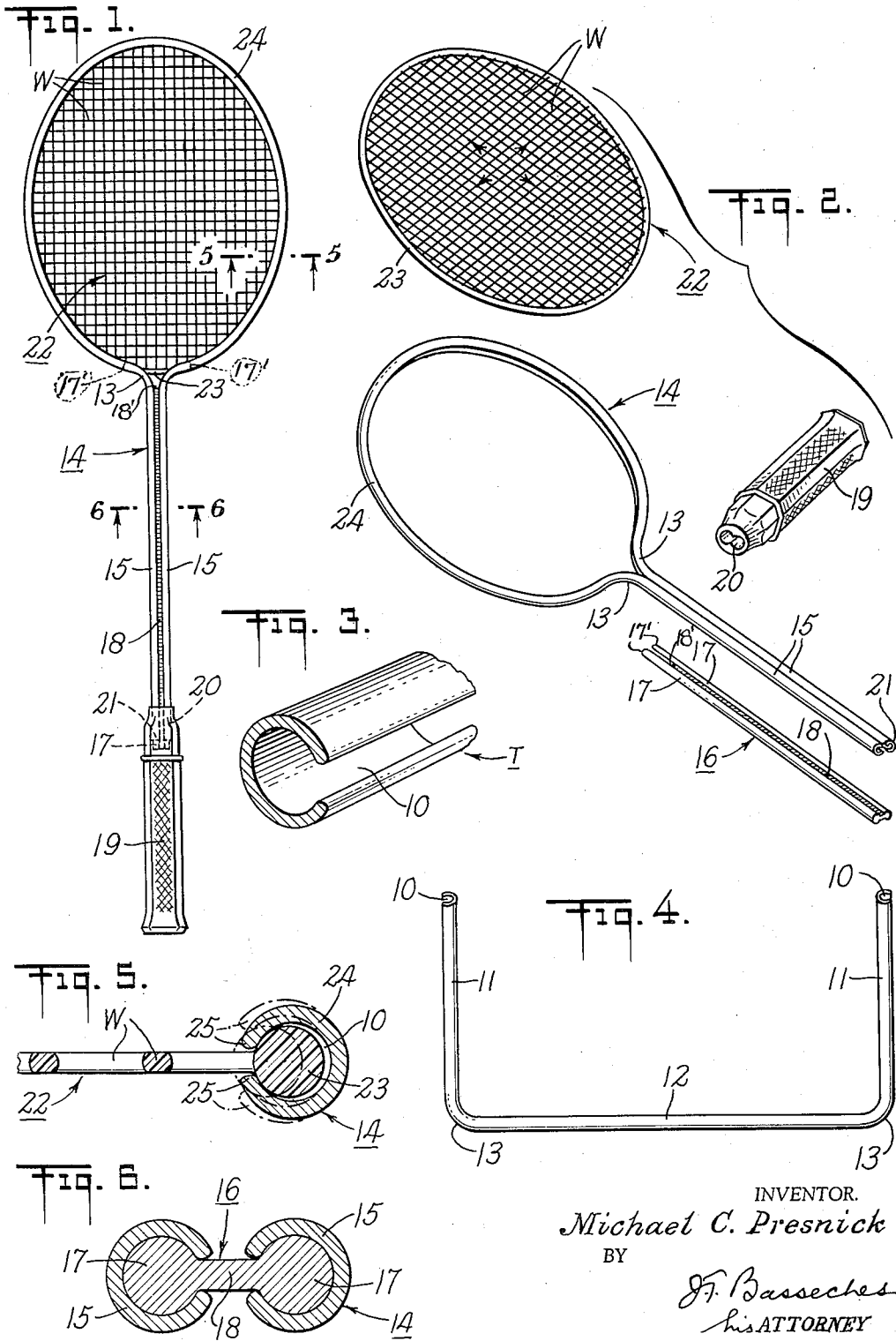
Jan. 31, 1961

M. C. PRESNICK

2,969,984

RACQUET

Filed Jan. 20, 1958



INVENTOR.

Michael C. Presnick

BY

J. Basseches  
his ATTORNEY

1

2,969,984

RACQUET

Michael C. Presnick, 150—20 71st Ave., Flushing, N.Y.

Filed Jan. 20, 1958, Ser. No. 709,962

4 Claims. (Cl. 273—73)

This invention relates to a racquet of the type used in playing games, such as badminton, tennis, squash or the like, wherein the players strike a moving shuttlecock or ball with a resilient grid commonly formed of tautened, interlaced strings of silk, nylon or gut stretched on a rigid frame.

Known to me are racquets of the type described made of laminated wood, metal or other warp resistant materials, having a generally ovoid head or frame and a handle extending as a continuation of the major axis of the ovoid of the head or frame. The periphery of the heads of such known construction is usually provided with spaced apertures intended to form anchoring points for lengths of the stringing materials aforesaid, which materials are threaded under tension lengthwise and widthwise through the said apertures to form a grid.

The operation of stringing a racquet of the type previously described is time consuming and customarily is carried out by highly skilled craftsmen, since it is desirable that each string forming a part of the grid be under the same degree of tension as every other string. Much equipment has been designed to simplify the stringing operation, and while such equipment has reduced the problems incident to stringing a racquet, the operation remains a tedious and difficult one.

While attempts have been made to eliminate the necessity for stringing racquets by providing an integral molded grip adapted to be supported upon special frame structures, the racquets employing such expedients do not have the proper feel or balance and have been more in the nature of toys than true game racquets, since the grids of such known structures are subject to the vice of looseness, and are likely to become displaced from the frame during hard usage.

Accordingly, it is an object of my invention to provide a racquet and integral grid structure free from the aforesaid disadvantages.

Another object of my invention is to provide a racquet of the type described particularly adapted for economical manufacture and assembly. A further object of my invention is to provide a novel racquet assembly of the type described, with the advantages aforesaid and without any sacrifice of rigidity, lightness of weight and balance factors in relation thereto.

Still a further object of my invention is to provide a novel method for manufacturing racquets of the type described of sheeted material, such as aluminum, to coordinate weight and balance with the requisite rigidity.

To attain these objects and such further objects as may appear herein or be hereinafter pointed out, I make reference to the accompanying drawing forming a part hereof, in which—

Figure 1 is a plan view of a racquet in accordance with my invention;

Figure 2 is an exploded perspective view of the components prior to final assembly;

Figure 3 is a magnified perspective view showing a length of tubing for use in connection with my invention;

2

Figure 4 is a perspective view of a frame for my invention in an intermediate stage of construction;

Figure 5 is a magnified section taken on the line 5—5 of Figure 1;

Figure 6 is a magnified section taken on the line 6—6 of Figure 1.

Describing my invention in detail, I supply a length of tubing T (see Figure 3) formed with an axially aligned channel 10. In the first step of construction, the tubing T is bent as shown in Figure 4 to form a pair of legs 11, 11, angularly directed relative to the central body 12 of the said tubing. It is important to note that the tubing is bent in the plane of the channel 10, and is bent away from the said channel.

The next step in assembly is to bend the points 13, 13, now forming the extremities of the central body 12 of the said tubing and later to form the throat portion of the racquet, toward each other to form the characteristic, generally ovoid head (see Figure 2). The operation is most conveniently carried out through the use of a bending template (not shown).

At this point it will be seen that the channel 10 forms an internal annulus continuously about the inner periphery of the now formed frame member 14, the legs 11, 11 forming in this position the handle portions 15, 15 by being positioned in parallelism and contiguous to each other.

The racquet frame is rigidified and the handle portions 15, 15 maintained in the desired parallel alignment by telescoping a specially formed insert 16 within the hollow handles 15, 15. The insert 16 comprises a pair of parallel, elongated rods 17, 17, joined by a central web 18 (see Figure 6). The rods 17, 17 are of a dimension to be snugly sleeveable within the hollow handles 15, 15 and the web 18 is of a thickness to permit smooth passage through the channels 10.

It will be readily recognized that when the insert 16 is sleeved within the handles 15 (see Figure 6), a unitary structure will be formed in which relative motion of the handles 15, 15 toward or away from each other as well as distortion under torsional pressure will be minimized.

My racquet assembly includes a grip 19, normally of wood, covered with a substance having a high coefficient of friction, such as rubber. The grip 19 is formed with an axial recess 20, shaped to permit the grip to be sleeved intimately over the outer end 21 of the handle portions 15, 15. It will be seen that when the insert 16 is positioned within the handle 15, 15 and the grip 19 is telescoped over the outer end 21 of the said handle and fastened in the said position, as by riveting, bolting or a like expedient, axial movement of the insert 16 within the handle portion is prevented at one end by the throat portions 13, 13 and at the other end by the grip 19. With the affixation of the grip, assembly of the racquet frame is completed.

My racquet is provided with an integral grid or striking surface, which is preformed and which may be quickly and permanently mounted within the assembled frame.

The grid 22, which may be molded or otherwise formed of nylon or a like resilient material, comprises a raised peripheral bead 23 of generally ovoid shape, spanned by a series of intersecting webs W, the said webs lying in a direction corresponding approximately with the major and minor axes of the ovoid head, as would be found in a strung racquet. The bead 23 is of a dimension to permit intimate insertion of the said bead within the channel 10 forming the internal annulus or inner periphery of the head 24 of the racquet. With the bead 23 thus positioned, the head 24 is subjected to great pressure applied by a press or the like in a direction normal to the plane of the said head, thereby causing the walls 25, 25 defining the channel 10 to move inwardly toward each other. The inward motion of the walls 25 against the

head 23 causes the latter to be cammed outwardly about its entire periphery from the position shown in dotted lines (Figure 5) to the position shown in solid lines, and at the same time closes the channel 10 sufficiently to lock the grid 22 within the frame. It will be readily recognized that the outward camming action of the walls 25 on the head 23 will cause the entire grid to be tautened uniformly, the degree of tautness being a function of the amount of movement of the walls. Some degree of stretching may be effected, if desired, by first uniting the frame adjacent the portions 13, 13, by suitable means such as a double-lobed plug which internally spans the segments of the head adjacent the bent points 13, 13.

By my invention I have provided a game racquet frame susceptible of economical manufacture and capable of withstanding, without damage, a great amount of abuse.

The use in my racquet of an integral molded grid or striking surface will result in further economies, without sacrificing playing quality.

It should be noted that while I may extend the insert 16 to a point adjacent the throat 13, I may split or bifurcate one end of the insert 16 up to the point 18' to provide spaced, short length bifurcations or branches 17', 17'. When the insert 16 is driven into position, the bifurcations 17', 17' will follow the throat portions 13, 13 of the frame to the right and to the left thereof, to reinforce the throat, which is the portion subject to the greatest stress and play. By also crimping the channel about these bifurcated branches, they are further anchored about the insert, in position to rigidify the handle with respect to the frame.

The frame in accordance with my invention is preferably made from sheet metal, such as aluminum, which may be slitted, or the C-shaped channel may be extruded in this shape. The use of aluminum tubing of this shape combines lightness of weight, for balance, with rigidity and resiliency heretofore experienced with costlier wooden frames.

For still further reducing the cost of the frame, other materials, such as plastics, may in a measure be used for some purposes.

Having thus described my invention and illustrated its use, what I claim as new and desire to secure by Letters Patent is:

1. The method of forming a game racquet comprising an integral webbing including a peripheral bead having intersecting strips defining a grid mounted under tension within a tube defining a frame, said tube having walls defining an inner peripheral split portion, comprising the steps of bending a length of said tubing to define a head portion of a size substantially conforming to the bead of said webbing, forming a pair of handle portions to each end of said head portion, positioning the bead within the split of the head portion, uniting the handle portions to form a rigid structure thereof, and crimping the inner split defining walls of the said head portion toward each other and toward the outer periphery of the said head

portion, thereby distending the strips defining said grid and securing said bead within said head.

2. A game racquet comprising a hollow frame including a head portion and extended parallel hollow handle portions, each having contiguous inner edges, the inner periphery of said head portion and said contiguous edges including walls defining a channel having a constricted mouth portion, integral grid means having a raised peripheral bead supported in distended condition within said head portion, said walls defining said mouth portion being crimped together substantially circumferentially over the inner portions of said peripheral bead in such close contact with said bead as to maintain said bead in said distended condition, and a stiffener member secured within said handle portions including extended parallel rods of a dimension to be intimately slidable within said hollow handle portions, and a central webbing joining said rods of a dimension to be slidable within said mouth portion.

3. The method of forming a game racquet comprising a tube having split walls defining an inner annular groove and an integral webbing having intersecting strips defining a grid including a circumferentially continuous bead of a size which would continuously and circumferentially engage the walls defining said groove, comprising the steps of bending a length of said tubing to define a head portion substantially conforming to said webbing, forming a pair of handle portions to each end of said head portion, positioning said bead within the split of the head portion, uniting the handle portions to form a rigid structure thereof and pressing the inner split defining walls of the said head portion toward each other and toward the outer periphery of the said head portion whereby the walls of the annular groove act to cam the bead in a radially outward direction to tension the strips of the grid.

4. A game racquet comprising a handle portion and a head portion, said last named portion including solid walls defining a channel having a constricted mouth portion, and integral grid means having a raised peripheral bead supported in distended condition within the channel of said head portion, said walls defining said mouth portion being crimped together substantially circumferentially over the inner portions of said peripheral bead in such close contact with said bead as to maintain said bead in said distended condition.

#### References Cited in the file of this patent

##### UNITED STATES PATENTS

50	1,179,435	Hutchinson	Apr. 18, 1916
	1,588,139	Penny	June 8, 1926
	1,606,022	Gallaudet	Nov. 9, 1926
	2,456,023	Rosenbalm	Dec. 14, 1948

##### FOREIGN PATENTS

55	204,113	Great Britain	Sept. 20, 1923
	317,653	Great Britain	Aug. 22, 1929
	712,224	Great Britain	July 21, 1954