Dec. 10, 1935. J. L. KLEINMAN 2,023,843

RACKET

Filed Aug. 28, 1931

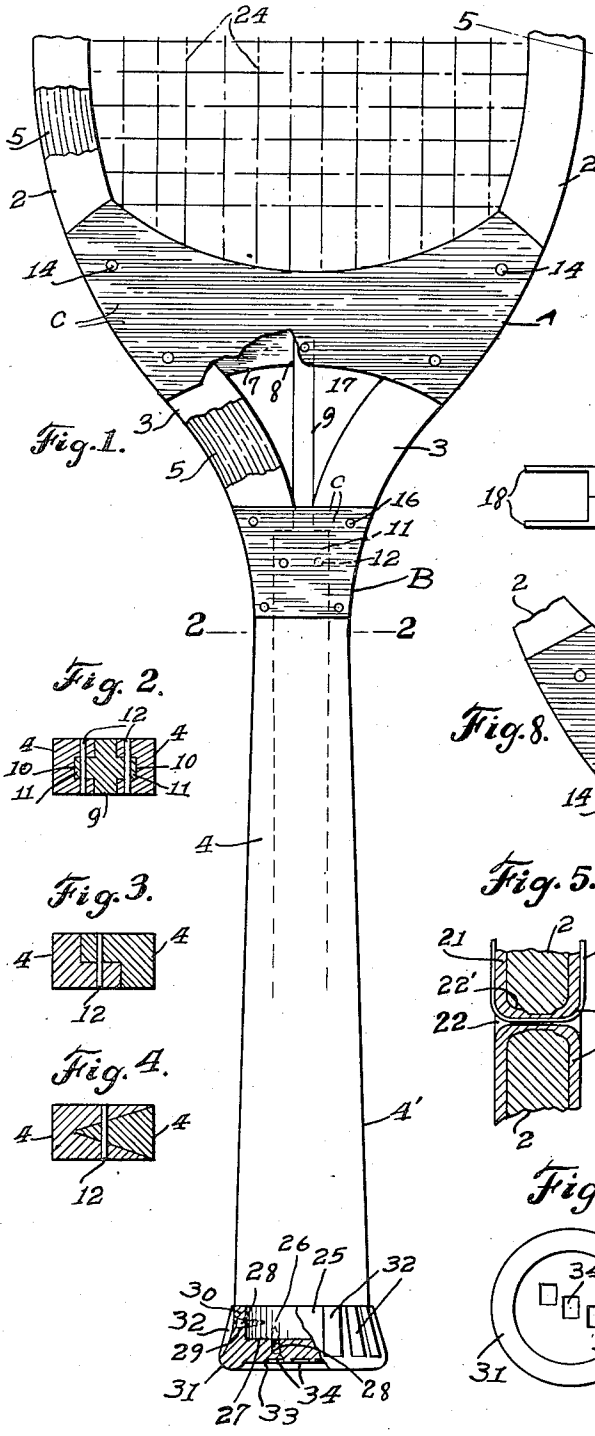


Fig. 1.

Fig. 2.

Fig. 3.

Fig. 4.

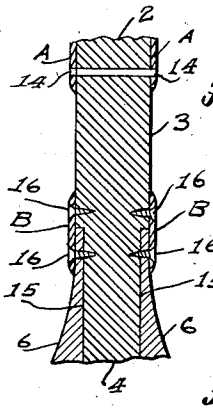


Fig. 6.

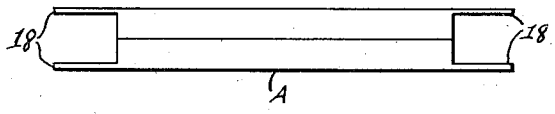


Fig. 9.

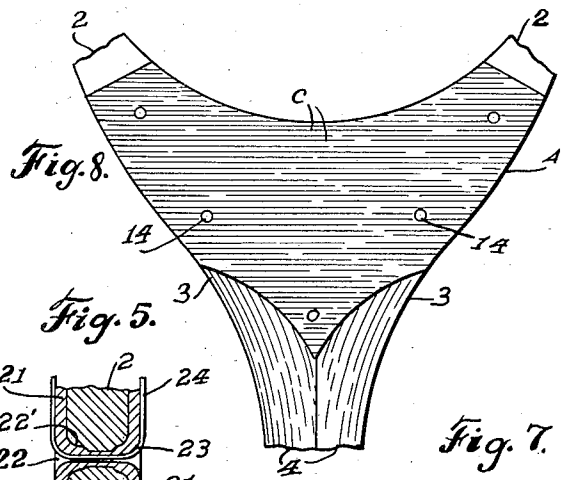


Fig. 8.

Fig. 5.

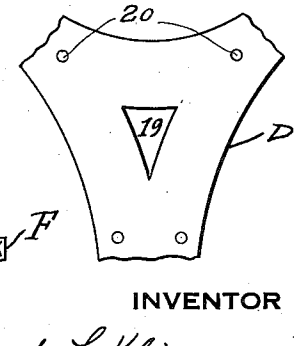


Fig. 7.

Fig. 10.

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RACKET

Jacob L. Kleinman, New York, N. Y.

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20 Claims. (Cl. 273—73)

This invention relates to rackets of all sorts and types and particularly to tennis rackets.

A primary object of this invention is to provide a racket which is so constructed that when the same is being strung, the compression caused by such stringing will not produce separation of the glued joints of the racket, particularly at its neck portion.

A further object is to provide a racket having a handle so constructed that certain parts of the same interfit and interlock with each other in order to form a strong, unitary structure.

Another object is to provide a handle structure of superior strength by employing pins running through said overlapping and interfitting parts, transversely, to the plane of the face of the racket, in order to further insure such parts against separation.

A further object is to provide a racket having a joining member, preferably having its grain lying in a plane and parallel to the plane of the face of the racket, overlapping and reinforcing the neck portion of said racket and further to provide other members passing through said first mentioned member and said neck portion transversely to the plane of the face of the racket thereby to prevent the separation of said portions.

It is also an object of the invention to provide a racket having a handle formed of sections defining the complete handle structure, the grain of said sections running preferably longitudinally of the racket, and a member overlapping and securing said sections to form said handle, the grain of said member running, preferably, in a plane parallel to the plane of the face of the racket; and a further object is to provide means passing through said member and said sections transversely to the plane of the face of the racket, thereby preventing the splitting and/or the separation of said sections.

A further object is to provide a racket having a neck and a handle, a wedge portion secured to said neck (preferably by means of glue) said wedge portion provided with an opening, a member within said handle, and secured thereto, a part of said member engaging said slot in said wedge portion and being secured thereto.

A still further object is to provide a racket having glued joints and a member covering and concealing said glued joints and preventing the opening of such glued joints and holding all such glued sections together.

Another object is to provide a racket having its frame covered with a suitable coating so as to provide a clean and smooth surface for the strings, thereby eliminating splinters or sharp edges which tend to abrade and tear the strings.

It is also an object of the invention to provide a racket having the bottom of its handle reinforced with a member made of a material other than that of the handle and serving to take the place of the leather portion hitherto employed, said member being preferably of a cup-type, and being so formed as to enable the same to be easily molded, and being grooved on its external surface to provide a non-slipping surface, and having one of its surfaces countersunk to provide space for an initial or name.

In other words, the general object of this invention is to provide a racket of a type that is durable in use, simple in construction, and convenient and economical to manufacture.

Other objects and advantages of the present invention will appear from the description thereof to follow taken in connection with the accompanying drawing in which—

Fig. 1 is a front view of a racket embodying my present invention, partly broken away at the frame, neck and also at the bottom of the handle to reveal the internal structure;

Fig. 2 is a cross-sectional view showing how the two handle sections are held together against separation and is taken along the line 2—2 of the handle of Figure 1;

Figs. 3 and 4 are modified forms of the construction shown in Figure 2;

Figure 5 is a cross-sectional view of the frame taken along the line 5—5 of Fig. 1; showing the coating providing a smooth surface for the string;

Fig. 6 is a partial side view in section of Figure 1, showing the mode of attachment of the reinforcing member to main body or frame of the racket;

Fig. 7 is a modified form of a reinforcing member which covers and also reinforces the frame at the neck portion.

Fig. 8 is a front view of a modified construction showing the reinforcing member overlapping the neck portion and also covering the opening thereof;

Fig. 9 is a horizontal view of the member overlapping the frame at the neck portion and shows a modified form of structure of said overlapping member; and

Fig. 10 is a front view of the bottom member of the handle showing the countersunk recesses for the initials or name.

Referring to the drawing, 2 indicates the frame 3 the neck portion and 4 the body portions of the handle of the racket, these parts being made

of a single bent piece of wood, as usual, with the grain 5, running longitudinally of the strip of wood, sections 6 are applied to said body portions of the handle 4 to complete the handle structure 4' (see Figs. 1 and 6). A wedge piece 7 having a slot or opening 8 is mounted at the inner part of the neck portions, thereby closing and completing the frames. A reinforcing member 9 is mounted between the portions 4. Grooves 10 may be formed in said portions 4 (see Figure 2) and tongues 11 may be formed on said member 9 to extend into said grooves 10, and pins 12 may be inserted into openings formed in said portions 4 and tongues 11, thereby forming a solid, strong, unitary handle structure. The upper end of member 9 extends into slot 8 of wedge 7. A cover plate A is positioned over the neck portion, covering the wedge 7 and also the joints between said wedge 7 and neck portion 3, and between the wedge 7 and member 9. Fastening means 14 are inserted into openings formed in said plate A and said neck portions 3, and in plate A and said reinforcing member 9, thus forming a neat and strong unitary structure, effectively preventing the separation of parts at these joints. In order to increase the strength of plate A I may form said plate in such a manner, that when it is in position on the racket its grain C runs transversely to the length of the racket in a plane parallel to the face of the racket.

In the embodiment of the invention illustrated in Figs. 3 and 4, the member 9 is eliminated. In Figure 3, the portions 4 are shaped as angle members which interfit and overlap with each other, and only one row of fastening elements 12 is necessary to hold the portions 4 together. The same is true of Figure 4, but with this difference that whereas in the other figures the longitudinal joint is visible at the front of the handle, in Figure 4 the joint is at the side of the handle. This feature is important in the manufacture of, for example, squash or badminton rackets, for where the section which covers the front of the handles does not reach up to the neck of the racket, but it made only of sufficient length to provide the gripping part of the handle, the joint is visible for the remaining part of the handle up to the neck portion, and it is very difficult to make this joint straight and neat in appearance. The structure shown in Fig. 4 is therefore an important improvement over the present type of construction, for the joint in my improved structure is located in a less visible and noticeable place, and a frequent cause for the rejection and return of rackets to the manufacturer, namely, an irregular and unsightly joint, is thereby eliminated.

With particular reference to Fig. 6 (which is a side view of Fig. 1) it will be seen that handle 4 is formed with recesses 15 wherein sections 6 are fitted. These sections 6 are usually made so that the grain runs longitudinally of the racket, the reason for doing so being that it makes it easier for the worker to scrape and clean the handle of the racket, but the section because of being shaped down to a thin layer at the upper end, often splits when hit by a ball (which happens frequently while playing). In order to eliminate such splitting of the sections, I have provided a cover member B placed at the end of such sections. The grain C of said member B preferably runs similarly to that of cover plate A. Fastening elements 16 provided with ribs, or threads such as screws secure said member B and sections 6 to the main body portions of the neck, or of the handle, as the case may be. Thus the cover member B, in addition to holding the handle portions together, also acts as a shield and thereby prevents the splitting of such sections.

With reference to Figure 8, member A is so shaped as to cover the openings 17 shown in Figure 1 (which is of the open throat type) and thereby providing what is known as a closed racket; said members A (one on each side of the racket) can be made of one single piece, or of two pieces as shown in Figure 9, and joined together, and provided with extensions, flanges or wings 18, to overlap the neck portion 3, thereby strengthening said neck portion and preventing breakage of same at that point.

Referring to Figure 7, it will be seen that a cover member "D" formed, molded or stamped out of any suitable material may take the place of members A and B and at the same time, also cover the parts of portions 3 which are uncovered in Figures 1 and 8 and are located between the cover plates A and B (see Figure 1). The cover member "D", if desired, may be provided with an opening 19 (to correspond with openings 17 of Figure 1), and with openings 20 to permit the insertion of fastening elements, such as pins or screws 14 and 16.

It is a known fact that glue shrinks as it dries, therefore, when two or more pieces of wood are glued together, cracks or openings are frequently visible at such glued joints, and create the impression that the joints are loosening and the sections coming apart. This, of course, is very objectionable and undesirable, particularly in rackets, as it hurts considerably the sale of the same. My improved construction solves this problem in a very satisfactory manner, as members A, B, and D, in addition to strengthening the racket, also hide the glued joints, and hence the shrinkage of glue at such points, so that no cracks are visible. A racket built according to my present invention has the appearance of a solid, strong, substantial and unitary structure. The elements A, B, and D may be placed on one side or upon both sides of the racket, as desired.

With particular reference to Figure 5, which is a cross-sectional view of the frame 2 of Figure 1, it will be understood, that the frame of a racket, made either of wood or of metal, has splinters or sharp edges around the holes where the strings pass and such splinters or sharp edges always cut the gut when in contact with same and cause such gut to snap at such places. In order to overcome and eliminate such cutting edges, I provide frame 2, with a suitable coating 21, (which may be of "Bakelite" if so desired), said coating 21 also covering the side walls and edges of holes 22, thereby providing a round and smooth seat 23 for string 24. By so eliminating the factors responsible for the cutting of the strings and providing a safe seat for the gut, I lengthen the life of same, considerably, (a matter which concerns greatly the player). It will also be noted that the holes 22 are formed with recessed portions 22' providing a seat or hold for the coating 21, thereby strengthening the coating at such points.

Referring to the bottom of the handle 4' (see Fig. 1) instead of the usual leather-portion, which often falls away from the handle after using the racket several times, I have provided a solid member 25 made of "Bakelite" or of any other suitable material, or of any suitable molded composition which may be attached to said bottom of said handle 4' in any desirable manner. Said member 25 may be made of cup-shape, if so desired; in such case the attaching of said mem-

ber 25 to the bottom of the handle 4' may be accomplished in the following manner: The extreme end 26 of handle 4' is reduced in size sufficiently to fit into the recessed portion 27 of cup 25, and a friction fit or glue may be sufficient to hold the cup 25 securely on portion 26, but if desired holes 29 may be formed in the side walls 30 of member 25 and fastening elements, such as screws 28, may be inserted. In order to make certain that the racket will not slip out of the player's hand when hitting a ball, the cup or member 25 is provided with outwardly flaring portions 31, rounded if so desired, and also with grooved out portions 32 wherein the flesh of the palm of the hand may fit in order to provide good gripping means and prevent turning of the racket in the hand of the player. A recess 33 and recesses 34 are formed, if so desired in order to provide a seat for a member F bearing the initials of the owner of the racket.

One of the recesses 34 (preferably the one off center) may be provided with an opening so that a fastening element such as screws 28' may be inserted therethrough and be driven into portion 26; said screw 28' being placed off center will in addition to holding member 25 securely to portion 26, prevent the rotation of said member 25. Initial plate F may then be placed in such recesses 34, covering and hiding such member 28' from view thereby furnishing a neat and pleasing appearance.

It will be noticed that the member 25 is so shaped as to facilitate its removal from a molding die without being broken, as the walls of all the grooves and flared portions are of tapered form without undercuttings.

Although I have mentioned in describing my invention of what materials certain parts may be made, yet I desire it to be understood that this racket, or parts thereof, may be made of any suitable material and that various changes in details may be resorted to without departing from the spirit of the invention and I desire to be limited only by the state of prior art.

By showing a preferred structure, I do not, by any means, limit myself to this structure only. Various suggestions of this invention may be used or be applied to any racket. And I desire it to be understood that I have same in mind when describing this invention, and seek protection by Letters Patent, and although I have mentioned in describing my invention of what materials certain parts may be made, how they may be shaped or styled and how they may be assembled, yet, I desire it to be understood, that this structure, or parts thereof, may be made of any suitable material and in any desirable style or shape and assembled in any suitable manner, and that various changes in detail may be resorted to without departing from the spirit of the invention.

I claim:

1. In a racket, an element bent to form the bow of the racket, the free ends of said element forming the neck and at least a portion of the handle, said free ends being connected to each other in a manner so that the visible joint may be located at the side of the handle, individual cover-plates overlying and covering at least certain parts of said free ends, and means adapted to hold said cover-plates to said parts.

2. In a racket, an element bent to form the bow of the racket, the free ends of said element adapted to form at least a portion of the handle and to interfit with each other in a manner so as to have the visible joint located at the side of the handle, cover-plates overlying and covering at least certain parts of said free ends, at least one opening formed in at least one of said cover-plates and in at least one of said covered free ends, a fastening element positioned within said opening transversely to the plane of the face of the racket, the wall of said fastening element engaging at least a portion of the inner wall of said opening, said fastening element extending substantially to the surface of the cover-plate so as to hold same secured to said covered free end and to be easily accessible for adjustment.

3. In a racket, a frame structure including sections forming a handle, said sections including elements tapering to a thin portion toward the throat of the racket, and a cover plate overlying and covering at least one of said thin portions and means securing said cover-plate to the underlying portions.

4. In a racket, a frame structure including sections forming a handle, said sections including elements tapering to a thin portion toward the throat of the racket, and a cover-plate overlying and covering at least one of said thin portions, registering openings formed in said cover plate and said covered parts, fastening elements inserted within said openings, said fastening elements extending substantially to the surface of the cover-plate so as to hold same to said covered parts and be easily accessible for adjustment.

5. In a racket, an element bent to form the bow of the racket, the free ends of said element being brought together and forming the neck and at least a part of the body portion of the handle of the racket, sections including elements tapering to a thin portion toward the throat of the racket associated with at least a part of said body portions and defining a complete handle structure, a cover-plate overlying and covering at least in part said tapered portion and fastening means uniting said cover-plate, said tapered portion and said body portion.

6. A racket comprising a frame, a neck, a handle, a one-piece bridging element secured to said neck, the front face of said neck provided with a horizontally disposed opening, a separate member having one of its ends mounted longitudinally within said handle and the other end positioned within an opening formed in said element, and at least one cover-plate covering at least a part of the joints between the neck, and the element.

7. In a racket, an element bent to form the bow of the racket, the free ends of said element forming the neck section and portions of the handle, a one-piece bridging element having its end portions secured to said free ends at about the neck section, an opening in said element, a separate member having a part of one of its ends mounted longitudinally within a recess in said handle and the other end positioned in said opening, at least one cover-plate overlying the front face of the racket at approximately about the neck portion thereof and covering at least a part of joints between the neck and the element, and fastening elements passing through said cover-plate and engaging at least one of said covered portions, said fastening elements extending substantially to the surface of the cover-plate and adapted to hold same tightly secured to said portions and to be easily accessible for removal.

8. A racket comprising a frame, the free ends of said frame forming a neck and at least a portion of the handle, at least a part of the contiguous surfaces of said handle portion being

shaped to provide a lapped connection whereby the visible joint of said connection may be positioned at about the side of the handle and whereby an increased area of contact is provided.

9. A racket comprising a frame, a neck, a handle comprised of sections, at least a portion of the contiguous surfaces of said handle being so shaped that they provide a lapped joint wherein the visible portion of said joint may be positioned away from the front face of the racket and whereby an increased area of contact is provided, fastening elements passing through said joined portions transversely to the plane of the face of the racket, and extending to the surface of said portions so as to be easily accessible for removal.

10. A racket comprising a frame, the end portions of said frame forming a neck and at least a portion of the handle, at least a portion of the contiguous surfaces of said handle being so formed that they interlock with each other forming a joint extending longitudinally of the handle and, having the visible line of joinder between said portions located at one of the sides of the handle.

11. A racket comprising a frame, a neck, said neck provided with a one-piece bridge member, the front face of said neck provided with an opening positioned transversely to the plane of the face of the racket, a handle comprised of at least two outer sections, an individual inner section mounted between said sections, said bridge member provided with an opening, the upper portion of said inner section positioned within the opening of said bridge member.

12. In a racket, a frame, sections forming a neck portion and a handle, a plate overlying and covering at least in part said sections at about the neck portion, the end portions of said plate provided with walls angularly disposed and adapted to engage a part of the inner end of the front faces of said neck portion, thus increasing the contact area between the end portions of said plate and said sections, thereby strengthening the neck of said racket.

13. In a racket, a frame, sections forming the neck and handle, a member bridging said neck sections, said member being concaved at its upper and lower portions, the end sections of said member being of greater width than that of the center portion of same, thus providing a larger contact area between said member and said neck sections thereby increasing the strength of the neck of said racket.

14. In a racket, a frame, sections forming a neck and a handle, an element bridging said neck sections, said element formed to leave a through opening at the neck of the racket, the lower edge of said element, which defines the upper boundary of said opening, being concaved, thus increasing said opening and providing an enlarged passage for the wind when swinging the racket in the air thereby reducing wind resistance during play while the area of the contact surfaces between the sides of such element and the neck of said racket remains materially unaffected.

15. In a racket, a frame structure including a handle formed of sections, said sections including elements tapering to a thin end toward the throat of the racket, and a cover-plate of which at least a portion is overlying and covering a part of said tapered end.

16. In a racket, a frame bent to form the bow of the racket, the free ends of said frame extending longitudinally of the handle and brought together to form a portion of the handle of said racket, sections associated with a part of said portions and defining a complete handle structure, a cover-plate overlying at least a part of said portion and a part of the end of one of said sections.

17. In a racket, an element bent to form the bow of the racket, the free ends of said element adapted to form the neck section and at least a portion of the handle of said racket, a one-piece bridging member having its end portions secured to said neck section, said neck section provided with a horizontally disposed opening extending from the front face to the rear face of the racket, said bridging member provided with a slot, a separate member having its lower end portion positioned longitudinally within said handle and its upper end portion positioned within the slot of said bridging member.

18. In a racket including a frame, a neck and handle sections, a one-piece element bridging said sections and leaving a through opening at said neck transversely to the plane of the face of the racket, said element provided with an opening, and a member having one end portion mounted longitudinally within said handle and the other end portion within the opening of said element.

19. In a racket, an element bent to form the bow of the racket, the free ends of said element extending longitudinally of the handle and joined to each other and forming at least a portion of said handle, said handle provided with a side face, said joint extending along said side face.

20. In a racket, an element bent to form the bow of the racket, the free end of said element extending longitudinally of the handle and forming at least a portion of said handle, said handle provided with a front face, said free ends secured to each other in a manner so that the visible joint is positioned away from the front face of said handle.

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