July 7, 1936. R. J. NASH 2,046,881

RACKET FRAME

Filed March 16, 1934

Fig. 1.

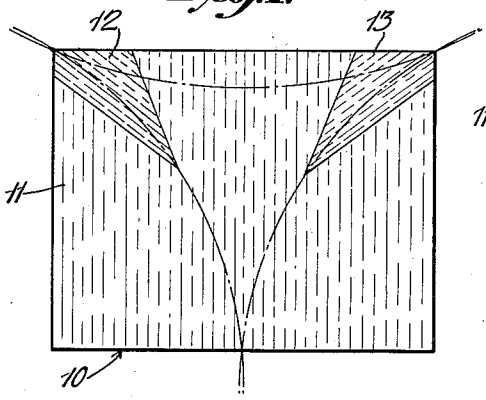


Fig. 2.

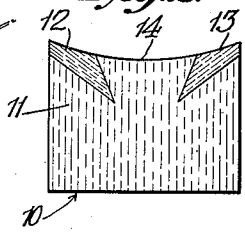


Fig. 3.

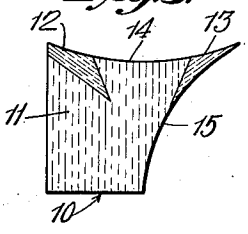


Fig. 4.

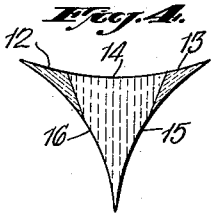


Fig. 6.

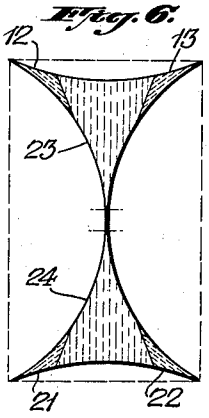


Fig. 5.

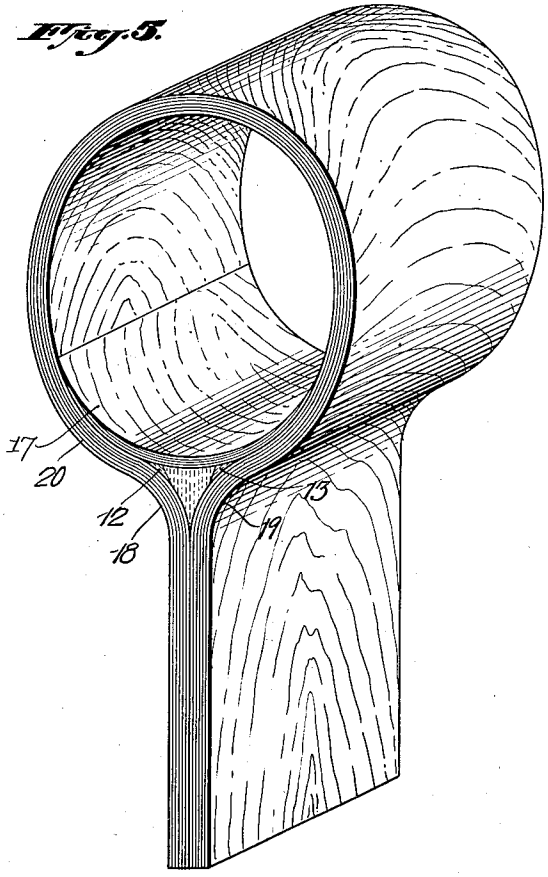
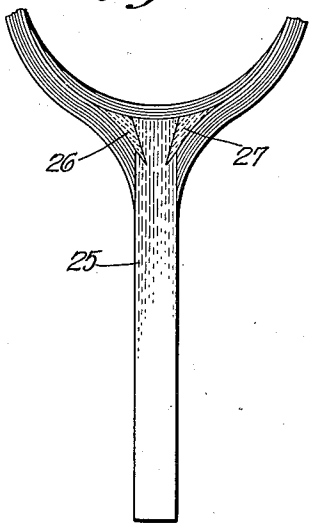


Fig. 7.



INVENTOR

ROBERT JOHN NASH.

BY Ushima & Rauber

ATTORNEYS

Patented July 7, 1936 2,046,881

UNITED STATES PATENT OFFICE

2,046,881

RACKET FRAME

Robert John Nash, Birmingham, England, assignor to Dunlop Tire and Rubber Corporation, Buffalo, N. Y., a corporation of New York

Application March 16, 1934, Serial No. 715,887
In Great Britain April 5, 1933

6 Claims. (Cl. 273—73)

My invention relates to rackets for lawn tennis and other games and to the manufacture of such rackets and relates particularly to a wedge piece, that is a piece which fits into the space between the inner edge of the racket above the throat and the extensions of the racket frame curving inwardly and downwardly to the handle.

The wedge piece in racket frames has three intersecting cylindrical surfaces, one on the top fitting the inner insertion which forms the lower rounded edge of the racket frame and two inwardly and downwardly curved side edges which fit against the downward extensions of the frame. Where the wedge itself extends down into the handle, there are thus formed two thin feather edges at the upper sides of the wedge where the side curvatures intersect the curving top surface. When the wedge does not extend downwardly into the handle, it terminates in the feather edge formed by the intersection of the two side surfaces.

When the wedge piece is formed of a single piece of wood, it is impossible to have the grain of the wood running lengthwise to the apex of each edge because these edges diverge in opposite directions whereas the grain of the wood must run in but a single direction. Consequently, if the wedge were formed in its final shape before being placed in the racket frame, there would be edges having the grain running crosswise and, therefore, very fragile and liable to be broken in forming or in handling. It has, therefore, been customary not to form the top edge until the wedge has been mounted and secured in place in the racket, whereupon the upper edge may be rounded and shaped and an insertion piece thereafter mounted, if so desired.

This is, however, disadvantageous from many standpoints and particularly when the racket is to be formed as described in my copending Patent No. 1,982,447, in which laminated frame strips are bent and wrapped about a former having elliptically curved sides and in which it is very desirable to place and secure the insertion piece in position during the wrapping or bending of the frame and in which, therefore, it is necessary that the wedge piece be of its final shape so that it may be also incorporated into the racket without additional finishing.

An object of my present invention is, therefore, to provide a wedge for tennis rackets and similar rackets in which the grain of the wood extends toward each of the feather edges of the wedge and to avoid any edges in which the grain of the wood runs transversely; to provide a racket frame in which is incorporated a wedge having the grain of the wood extending toward the feather edges; and to provide a method whereby racket wedges having feather edges may be readily formed with the grain of the wood extending toward said feather edges.

The various features of the invention are illustrated in the accompanying drawing, in which

Fig. 1 is a plan view of a block of wood from which the wedge is to be cut and showing the arrangement of the pieces of which this block is made, so that the grain runs toward the edges to be formed; Fig. 2 is a similar view on a smaller scale of the block of wood after the top surface has been cut into the block of wood; Fig. 3 is a view similar to Fig. 2 showing the block after one of the side surfaces has been cut; Fig. 4 is a view showing the finished wedge formed by the cutting of the third side, that is the side opposite that cut in Fig. 3; Fig. 5 is a racket frame structure showing the manner in which the wedge is incorporated in the structure; Fig. 6 is a view similar to Fig. 4 showing a manner in which two wedges may be simultaneously formed from a block indicated in broken lines; Fig. 7 is a view of a lower part of a finished frame in which a wedge extends downwardly to form the handle of the racket.

The invention is shown in the accompanying drawing, particularly in Fig. 5, as applied to a frame structure formed of lamina, bent to the form of a racket, the lamina being of a width equal to the thicknesses of several finished rackets, for example, of a width sufficient to provide twelve rackets, so that it may be cut into a number of racket frames. It will be understood, however, that the invention may be applied to the formation of racket frame of different thicknesses from that illustrated in the drawing.

In my present invention, a racket wedge is cut from a foundation block or billet of wood, which has been built up of a plurality of pieces or parts, positioned so that the grain of the wood in those parts which are to form the feather edges of the wedge points or extends toward the edge. The pieces are thus arranged so that the tapering free corner in the wedge is at the optimum angle to the grain. When a composite billet has thus been formed, cylindrical surfaces are cut at the top and two sides by means of a rotary cutter. These surfaces intersecting to form the feathered edges and to give the resulting piece the desired wedge-like shape. This wedge may then be formed into the racket frame, as described in my Patent No. 1,982,447.

Referring to the accompanying drawing, a billet or block 10 is formed of a piece of wood 11 having the grain running vertically and having inserts 12 and 13 glued therein at the upper side edges and with the grain of the wood in the parts 12 and 13 extending in an upward, outward angle extending toward the edge to be formed at the respective side of the block. Thereafter, the upper face of the block is cut to the curvature indicated at 14 in Fig. 2 by means of a rotary cutter operating at a radius to give the desired curvature. One side is then similarly cut by a rotary cutter to give the curvature 15, as shown in Fig. 3. When the opposite side is cut to give the curvature 16, as shown in Fig. 4, the wedge is completed. It will be apparent from the showing in Fig. 4 that the insert pieces 12 and 13 have grain that extends upwardly and outwardly in the same direction as the feather edges formed by the curved sides 14, 15 and 16. At the same time, the curvature of the main part of the wedge extends vertically toward the handle of the racket. It will thus be apparent that the upper edge 14 may be formed to fit the curvature of an insertion 17 in the racket frame shown in Fig. 5 and the side edges are curved to fit the intercurving parts 18 and 19 of the racket frame 20. Instead of cutting but one wedge at a time, two wedges may be cut, as indicated in Fig. 6 by providing a block indicated in outline by the dotted lines twice or approximately twice the height or breadth of that shown in Fig. 1 and in addition to having the inserts 12 and 13 in the upper edges having additionally the inserts 21 and 22 arranged in complementary fashion in the lower edge of the block so that two wedges 23 and 24 are formed by the intersection of the side edges of the wedge.

In the form of the invention shown in Fig. 7, the main part of the wedge instead of being in the form of the block 10 is in the form of a handle 25, in the upper side edges of which are inserted or secured the pieces 26 and 27 with the grain extending in outwardly flaring directions so that when this part of the handle and wedge structure is cut by the rotary cutters the handle portion 25 extends downwardly, it being understood that the side cuts do not intersect in this case. However, this permits the upper feather edge portions to extend in the optimum grain of the wood while permitting the grain in the handle part to extend longitudinally. It is particularly advantageous to have the side edges curving in a curvature of a circle when the wedges are to be used in the formation of a racket according to the method of my Patent No. 1,982,447, because in this method pressing rollers are to fit into this curvature. The curved edges may be cut by any suitable means, preferably a stationary cutter rotating at high speed past which the billet is traversed along suitable guides. It will be understood that when the racket structure shown in Fig. 5 has been completed, a number of rackets may be formed therefrom by cutting this structure on parallel planes.

Having now described the invention, what I claim is:—

1. A wooden wedge for tennis rackets having upper and side faces meeting in upper side feather edges and a bottom feather edge, and comprising a main piece extending from the top surface to said bottom feather edge, and side pieces one at each side and forming said side feather edges, the grain of said main piece extending downwardly towards said bottom feather edge, the grain of said side pieces extending upwardly and outwardly to their respective side feather edges.

2. A wooden wedge for racket frames having upper and side pieces meeting in feathered edges and comprising a main piece having its lower end forming said lowermost feather edge and having its sides terminating short of said side feather edges, and side pieces one at each side extending from the respective sides of said main piece to form said side feather edges, and having their respective grains extending towards their respective feather edges.

3. The structure of claim 2 in which the side and top surfaces of said wedge are of cylindric contour.

4. A racket frame having a loop member and extensions therefrom to form a handle and a wooden wedge insert, said wedge insert comprising a main piece with its grain extending downwardly and terminating in a feather edge at the point where the extensions of said loop join to form a handle, and having side pieces one at each side with the grain extending sidewise into feather edges.

5. A wooden wedge for racket frames having an upper and side faces meeting on side feather edges and comprising a main piece extending downwardly from the upper face and having the grain running toward its lower end, and side pieces, one at each side extending upwardly and outwardly at an angle from its respective side of said main piece to its respective side feather edge and having the grain running upwardly and outwardly towards its respective side feather edge, said side pieces terminating at and abutting the sides of said main piece and forming smooth continuous and unbroken side faces from said feather edges and merging with the side faces of said main piece.

6. A wooden wedge for tennis rackets having upper and side faces meeting in upper side feather edges and a bottom, and comprising a main piece extending from the top surface to said bottom, and side pieces one at each side and forming said side feather edges, the grain of said main piece extending downwardly towards said bottom, the grain of said side pieces extending upwardly and outwardly to their respective side feather edges.

ROBERT JOHN NASH.