

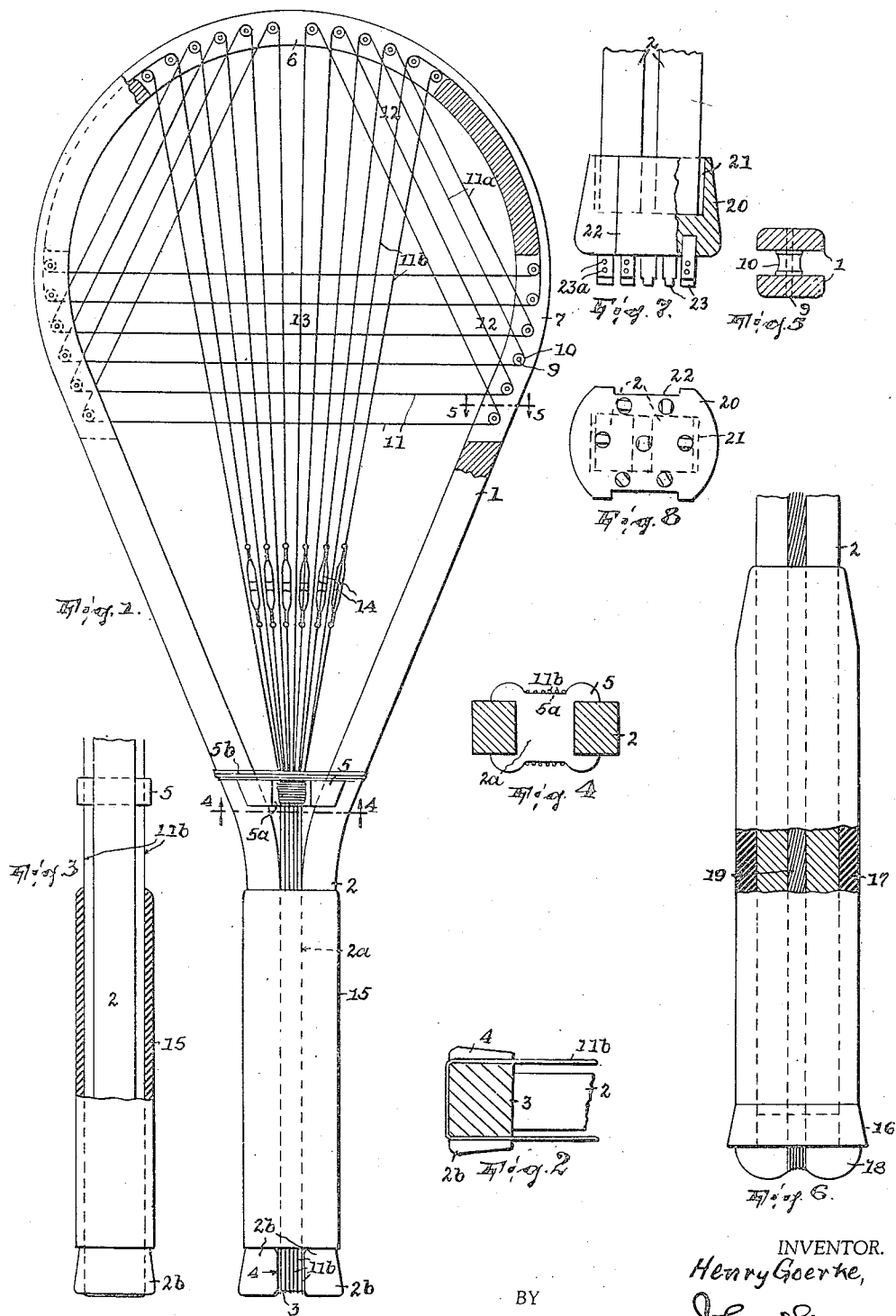
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RACKET

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RACKET

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In my application Serial No. 242,493 is set forth a racket used in playing tennis and other games in which a number of strings are used instead of only two, such having certain advantages among which are increased string resilience and the possibility of the player himself readily effecting adjustment of the tension of the strings. In that case each of the strings used, having its mid-portion crossing the head transversely of the axis of the racket handle and its extremities bent away from and then toward the handle, had the portion thereof between the two bends on either hand in contact with the outer surface or perimeter of the head. According to the present invention each string, having as before its mid-portion crossing the head transversely of the axis of the handle and its extremities bent away from and then toward the handle, extends as to the portion between each two bends in a chord of the head or directly from one bend to the other and so across the space of the head, in bias relation to the axis of the handle. Further, at each bend an anti-friction bearing is preferably positioned to support the corresponding string. Thus the resilience of the racket is increased and desirable crossing areas of the strings result.

Further, according to the present invention each string may form part of an endless flexible element, and such element may include means for adjusting the tension thereof.

The invention also contemplates other novel provisions for effecting adjustment of the strings.

In the drawing,
Fig. 1 is a face view of the improved racket,
a portion of which appears in section;

Fig. 2 is an enlarged fragmentary section on line 2-2, Fig. 1;

Fig. 3 is a side elevation, partly in section, of the handle portion of the racket;

Figs. 4 and 5 are enlarged sectional views on lines 4-4 and 5-5, respectively, of Fig. 1;

Fig. 6 is a face view of a modified form of the handle portion of the racket; and

Figs. 7 and 8 are a fragmentary side and an end elevation of a modified form of handle and string-adjusting means, Fig. 7 being partly in section.

The open head 1 of the frame is formed of a strip of wood of suitable length bent at its mid-portion to substantially semicircular form and having its extremities then converging toward each other. Said extremities are then bent so as to form shafts 2 parallel to each other and having a passage 2a between them and forming an extension of the head. At their free ends the

shafts have terminal knobs 2b and are maintained in any way in fixed relation to each other and spaced by a block 3 of less thickness than their knobs, whereby notches 4 exist at the sides of the extension corresponding to the opposite broad faces of the head. Near the extremities of the converging portions of the shafts and between such portions is arranged a block 5 notched to receive them and also notched, as at 5a, at the sides thereof corresponding to the faces of the head; this block and the block 3 are to form supports by which the strings may be supported in bridging state, to wit, in spaced relation to the handle part of the racket formed by the extension between the blocks 3 and 5. The block, acting as a wedge, may be adjusted toward or from the free end of the handle thus to tension the entire strung structure. When adjusted it may be held against displacement upwardly by any expedient, as a wrapping of cord or tape 5b.

The far end of the head is formed with a central slot 6 lying in a plane midway between the two faces of the head; similar slots 7, similarly located, are formed where the converging portions of the head merge into its semicircular portion. Each slot is traversed by pins 9 arranged in a row extending lengthwise of the strip, and on each pin and in the slot is journaled a grooved pulley 10 forming an anti-friction bearing. There are twelve pins and bearings in the slot 6 and six in each of the slots 7 in the present instance.

There are six strings each existing with a mid-portion 11 which crosses the head transversely of the handle axis and terminals which are first bent to converge away from the handle, as at 11a, and then bent, as at 11b, generally toward the handle. In this example in the same order as the mid-portion 11 of the strings are positioned in a direction from the handle, so their portions 11b are positioned from the handle axis; that is to say, the string having its mid-portion 11 nearest the handle has its portions 11b next remote from said axis, and so on, the portions 11b of any string being on opposite sides of said axis. But each of the portions 11a extends in a chord or directly across the head, thus distinguishing from the construction of my application in which the corresponding portions extend in contact with the perimeter of the head, and resulting in the impact network formed having desirable reticular areas at 12 additional to the main reticular area or "playing center" at 13. At each bend each string extends around one of the anti-friction bearings 10.

Each string forms a portion of an endless flexi-

ble element, thus: One end portion of the string extends short of the handle. The other extends past and in contact with the bridge-forming block 5, then down opposite the space between the handle-shanks 2, then around the block 3, then back opposite said space and past block 5 to a turn-buckle 14 by which it is connected to the first-named end and which serves as means to adjust the tension of such endless element. Preferably three of the strings will have their first-named or shorter end portions at one face of the racket and the other three their shorter ends at the other face of the racket, so that one-half of the turn-buckles may be at one face and the other half at the other.

It is noted that the strings in tensioned state bridge the blocks 3 and 5. Thus they form in effect a handle proper affording a yielding grip; further, it is possible for the player to tension the strings at the moment of impact of the ball with the racket by varying the pressure of his grasp on the handle proper. The latter may be desirably equipped with a flexible tubular grip, as 15, fitted over the same.

In Fig. 6 the shafts 2 are equipped with a fixed terminal block or butt 16 and there may be a flexible or other tubular grip 17 on the handle they form. Bearing against the block or butt 16 is a rotatable member 18 notched to receive the mentioned endless elements extended around it. By turning this member around the handle axis the player twists said elements, as shown at 19, within the space of the handle, and thus tensions said elements.

Resilience in the entire structure is desirably increased by bending the frame-forming strip substantially as stated, or notably with the mentioned converging portions, actually substantially straight.

According to the construction of Figs. 7 and 8 each string may be adjusted without resort to turn-buckles and in this instance has both ends extending beyond the handle end of the racket. A butt 20 is to be fitted over the ends of the handle-forming extensions 2 of the frame, having a socket 21 receiving them which is elongated crosswise in the plane in which said extensions lie but is only as wide as they are thick in a direction through said plane. In those side faces thereof which are substantially parallel with said plane recesses or notches 22 are formed in the butt, and these are to receive respectively the extremities of each string. Projecting from the face of the butt opposite that which is formed with the slot is a series of pins 23 which are tightly fitted into the butt and each having a pair of holes 23a, there being one pin for each string. The extremities of any given string are extended through the respective holes and may then be tied in any way, whereupon the pin is turned to tighten the string, after which the string may be again tied in some way to prevent re-rotation on the pin. When the strings are under tension such tension of course holds the butt from displacement lengthwise of its slot. However,

displacement of the extensions 2 toward or from each other, by adjusting the mentioned block 5, remains possible.

Besides advantages of my construction already noted or obvious is the circumstance that gluing at any point is unnecessary.

Having thus fully described my invention, what I claim is:

1. The combination, with a frame including the head of a racket of the class described and the handle-including extension of the head, of means to form the impact-network of the racket comprising string elements maintained in tensioned state by the frame and having their mid-portions crossing the head transversely of the axis of the handle and each having its extremities first bent away from the handle and extending across the head in converging relation to each other and then bent toward the handle and crossing said mid-portions, said head having means to support said elements at the bends therein.

2. The combination, with a structure including the head of a racket of the class described and a handle-including extension of the head, of means to form the impact-network of the racket comprising endless string elements crossing the head transversely of the axis of the handle and then bent first away from and then bent generally toward the handle and crossing said mid-portions and also bent around the free end of the handle and maintained by said structure at all of their bends in a state of tension.

3. The combination set forth in claim 2 characterized by each string element including a string and a turnbuckle connecting the ends of the string.

4. In combination, the frame of a racket of the class described including a head and an extension thereof, string elements existing in a state of tension and crossing the head and forming therein the impact area of the racket and extending lengthwise of the extension and supported by the head and at the free end portion of said extension, said extension providing between its said free end portion and the head a handle and having means respectively adjacent said head and free end portion to support said elements in exterior bridging relation to and spaced from the handle.

5. The combination set forth in claim 4 characterized by said string elements being endless and trained along one side and back along the opposite side of the extension.

6. The combination of a frame including the head of a racket of the class described and an extension of the head, said extension including a fixed handle-forming portion having a longitudinal passage and a terminal member revoluble around a longitudinal axis of the extension, and endless string elements forming an impact area in and supported by the head and extending through said passage and around said member.

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