Aug. 28, 1951 C. LA CROIX 2,566,215

TENNIS RACKET ADAPTER

Filed May 12, 1950

FIG. 1

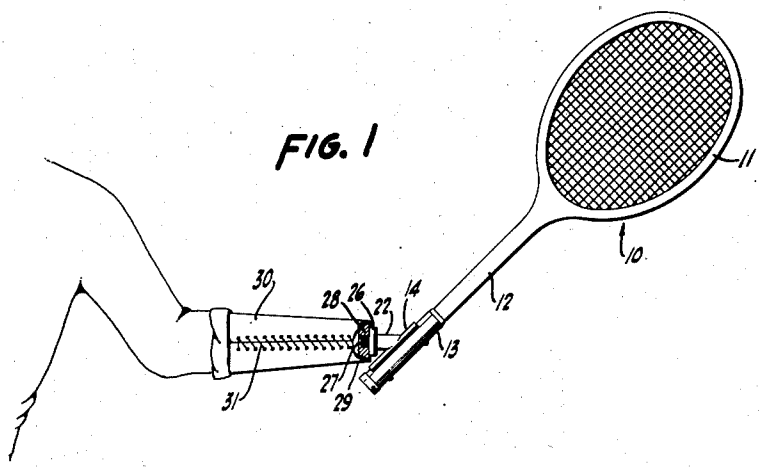
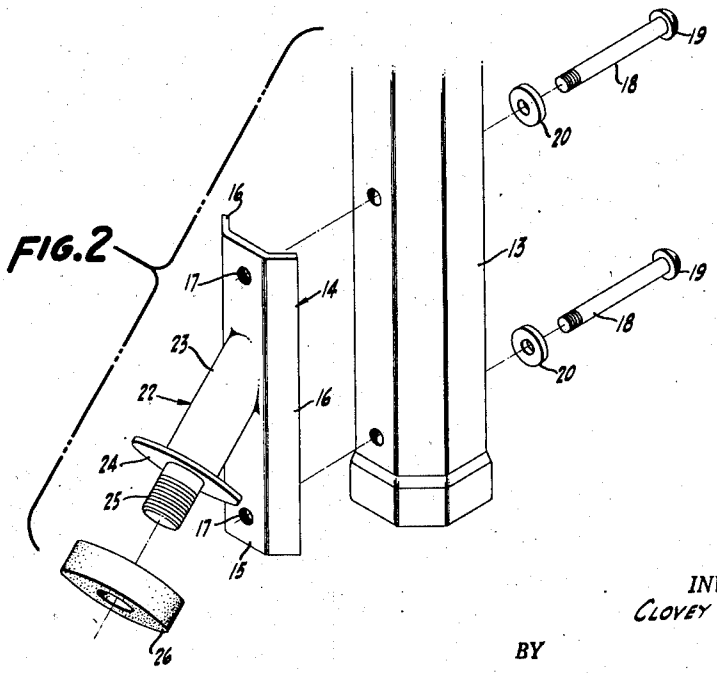


FIG. 2



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TENNIS RACKET ADAPTER

Clovey La Croix, Alameda, Calif.

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1 Claim. (Cl. 3—12)

1

This invention relates to an adapter for tennis rackets and is particularly concerned with an adapter for a tennis racket by which the racket may be secured to the extremity of an artificial limb so that an amputee may confidently and competently enjoy and profit by the pleasure and athletic value of a tennis match.

As a result of the war, industrial casualties and accidents of various types, there are estimated to be not less than 25,000 persons in the United States who through amputation are deprived of their tennis playing arm or such portion thereof as will prohibit their satisfactory manipulation of a tennis racket. While many such amputees may through disinclination, age, or from other circumstances exclude themselves from this activity, nevertheless a majority of our amputees, and particularly those casualties of the late war, are young men who are ideal candidates for tennis. Many of these persons have previously been tennis players and would welcome the opportunity of resuming the game. Since tennis may be played by only two contestants and since it involves both vigorous bodily exercise as well as skill and an alert continuous preoccupation, it is an ideal recreation, exercise and morale building occupationally therapeutic activity.

While it is conceivable that the handle of a tennis racket might be secured to an artificial hand or to present-day holding and manipulating devices which are secureable to the extremity of hand, adequate means have not heretofore been found by which the racket could be so securely been found by which the racket could be securely attached as to preclude accidental displacement during the vigorous activity of the game, and means have not heretofore been provided by which a racket might be adequately secured at the desirable playing angle. Because of such failure the amputees have been deprived of activity in this sport.

It is, therefore, among the primary objects of the present invention to provide an adapter for tennis rackets by which it may be secured to the extremity of an artificial limb or a portion thereof.

Another object of the present invention is to provide an adapter for tennis rackets whereby the handle of the racket may be securely attached to the extremity of an artificial limb in such manner as to preclude accidental displacement thereof to the end that facility in the muscular control of the wearer will permit manipulation and control of the racket with all the dexterity common to a skilled player who holds the racket in his natural hand.

Another object of the present invention is to provide an adapter for tennis rackets by which the same may be rigidly secured to the extremity of an artificial limb and to extend therefrom at

2

and ideal angle such that the tennis ball may be struck either forehand or backhand with the same accuracy with which it is struck by a player who has not been deprived of his hand, wrist or arm.

A further object of the present invention is to provide an adapter of the character set forth which is simple in construction and which may be readily attached and detached from a tennis racket of conventional form and which device has a minimum number of parts and is well adapted to meet the demands of economic manufacture.

A still further object is to provide an adapter of the character set forth which is of such light weight as to permit the use of the same without encumbering the user with the disadvantage of undue additional weight.

Numerous other objects and features of the present invention will be apparent from consideration of the following specification taken in conjunction with the accompanying drawings, in which:

Fig. 1 discloses the upper and forearm of an amputee, the forearm being provided with a conventional artificial limb extremity and showing a tennis racket provided with the adapter of the present invention secured to such extremity.

Fig. 2 is a detailed exploded view of the racket handle, together with the parts of the adapter of the present invention.

Briefly the present invention may be defined as comprising a bracket having a tennis racket handle engaging plate and an angularly distending shank terminating in a threaded portion adapted to be received in threaded engagement with the conventional centrally threaded plate of the extremity of an artificial limb, together with appropriate securing means by which the plate is rigidly attached to the handle. In order to permit adjustment of the angularity of the plane of the racket with respect to the axis of the threaded portion of the artificial limb there is provided a flange on the shank of the adapter together with a resilient washer of substantial thickness, the arrangement being such that as the adapter is screwed into the artificial limb, the washer will be compressed in order to frictionally retain the racket in such adjusted angularity as the player may desire.

Referring more particularly to the drawings, the racket, which is of purely conventional form, is generally indicated by the numeral 10 and includes the conventional head 11 and handle 12 with its grip portion 13. The grip portion of the racket is here shown as of conventional octagonal form. It will be understood, however, that the invention is not confined to a grip portion formed in this exact configuration. It will also be understood that while the present invention is herein disclosed as designed and

adapted for a tennis racket, the present inventive concept is not limited in this respect and various rackets such as for use in connection with the games of squash, badminton, ping pong and similar games, may be provided with adapters formed in accordance with the present invention.

The adapter of the present invention comprises an elongated plate **14**, the transverse cross section of which is formed in conformity with the external configuration of the grip portion of the racket. In the present form of the invention, the grip portion of the racket being shown as octagonal, the plate **14** is formed to embrace three contiguous surfaces of such formation. Thus the plate **14** is formed with a central flat portion **15** and co-extensive inwardly turned sides **16**, the angularity of which with respect to the central portion **15** is in conformity with the angularity of the edges of the octagonal grip portion of the handle of the racket. At either end of the body **15** threaded apertures **17** are provided which are adapted to receive the threaded ends of bolts **18** which extend transversely through the racket, their heads **19** being formed as screw heads to facilitate the threaded engagement of their ends with the plate. Washers **20** are preferably provided in order to secure the heads against undue wear of the grip surface of the racket.

Extending outwardly and downwardly from the plate **14** there is provided a shank **22** which is preferably disposed at an angle of approximately 45 degrees with respect to the plate and is disposed in such manner as to extend downwardly and outwardly with respect to the head of the racket in a plane coincident with a plane extending through the axis of the racket handle. With respect to the angularity of the shank and the plane in which its axis lies, it will be understood that the invention is not limited to the exact angle of 45 degrees here suggested, nor to the location of the axis of the shank coincident with the plane passing through the axis of the handle. However, extensive experience has shown this angularity and disposition of the axis to be preferable when the inventive concept is applied in connection with tennis rackets. An adapter formed in accordance with the present invention for use with other types of rackets may be disposed at other angularities and in planes departing from a plane coincident with the axis of the handle.

The body **23** of the shank here shown is approximately three inches long, although this length also may be varied in accordance with the type of racket to which the adapter is to be applied, and the invention is not restricted to the particular length here suggested. At the end of the body **23** of the shank there is provided a transversely extending rigid and integrally formed flange **24** beyond which the shank is provided with a reduced threaded end **25**. Seated over the end **25** and lying against the flange **24**, there is provided a rubber or like resilient washer **26** of substantial thickness. The provision of such a washer provides for compression thereof when the threaded portion of the shank is screwed in a receiving portion of an artificial limb as will be hereinafter referred to, and thereby such compression provides a constant tension on the threaded connection so as to preclude inadvertent or accidental rotation of the threaded end of the shank with respect to the end of the artificial limb. Thus, an angular adjustment of the racket may be secured and such angular adjustment, which may be a matter of preference of the player, will be retained throughout the play without danger of inadvertent tilting as a result of the impact of the racket with a tennis ball.

As indicated in Fig. 1, the threaded end of the shank is adapted to be received within the threaded central aperture **27** of a transverse end plate **28** carried by the terminal end **29** of an artificial limb section **30**. It will, of course, be understood that the present invention is not concerned with the structure, function or operation of an artificial limb, and the disclosure herein is thus restricted to the disclosure of merely an end cuff **30** secured by lacings or the equivalent, indicated at **31**, to the end of the forearm of the amputee. There are, of course, many and varied types of artificial limbs which may constitute an entire arm or portions thereof. It is common, however, to all of such limbs to provide a transverse centrally threaded end plate of the type here shown at **28**, and the present invention is, therefore, capable of securement in the manner here shown to all of such limbs.

From the foregoing it will be seen that the present invention provides a novel, simple, effective and efficient means by which an amputee may manipulate a tennis or like racket and develop such skill as will permit successful competition with less handicapped players. It will further be seen that the present adapter is structurally simple, of few parts, readily applied and removed from a standard racket, and well suited to the demands of economic manufacture. It will, of course, be understood that the invention is not confined to the specific embodiment here shown and that numerous changes, modifications, and the full use of equivalents may be resorted to in the practice of the invention without departing from the spirit or scope of the invention as defined in the appended claim.

Having thus described my invention, what I claim and desire to secure by Letters Patent is:

An adapter for a tennis racket having an octagonal handle comprising a plate having a central portion formed to fit one face of the racket handle and a pair of side flanges adapted to fit side edges of the handle contiguous to the face thereof, threaded apertures in said plate, securing bolts extending through said handle and threadedly engaging said apertures, a shank extending outwardly from said plate and at an angle thereto and lying in a plane coincident with a plane passing through the axis of a racket handle secured to said plate, a flange on said shank, a coaxial threaded extension of said shank beyond said flange, and a resilient washer mounted on said extension.

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