Aug. 30, 1938. R. HEIMERS 2,128,610

SUPPORT FOR THE ELASTIC IN BALL GAMES WITH ATTACHED BALL

Filed Feb. 5, 1937 3 Sheets-Sheet 1

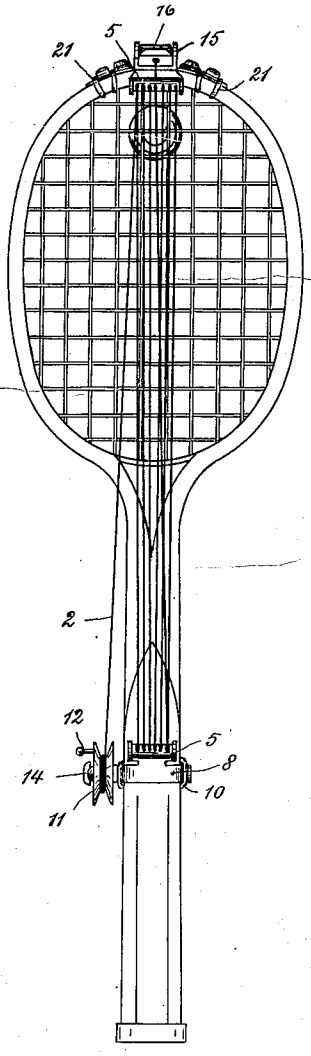


Fig. 1.

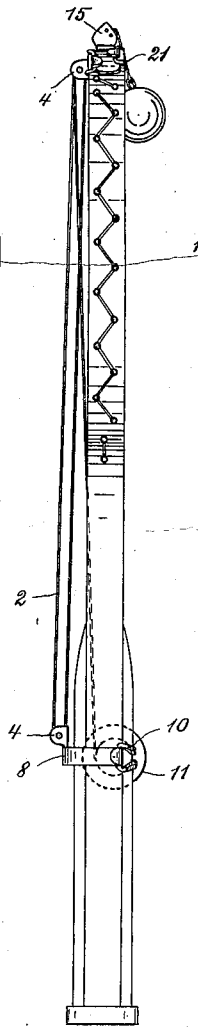


Fig. 2.

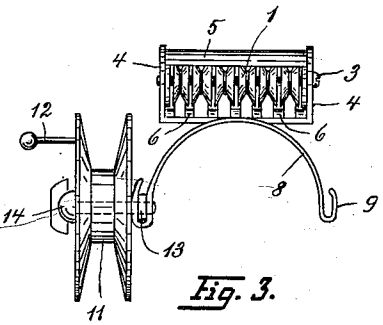


Fig. 3.

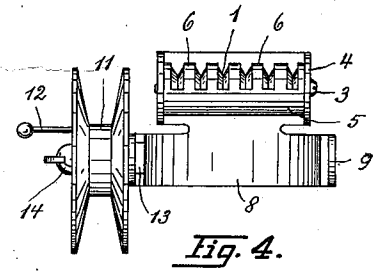


Fig. 4.

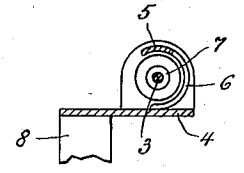


Fig. 5.

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SUPPORT FOR THE ELASTIC IN BALL GAMES WITH ATTACHED BALL

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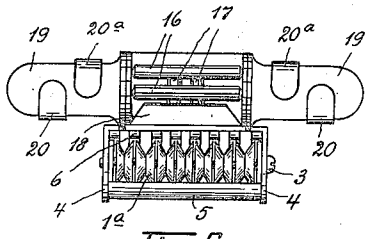


Fig. 6.

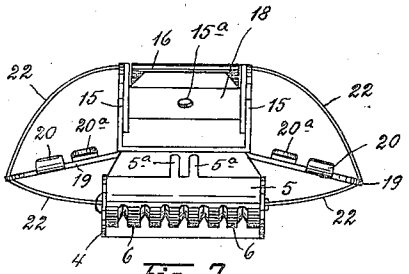


Fig. 7.

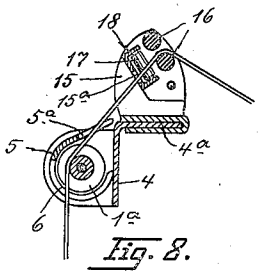


Fig. 8.

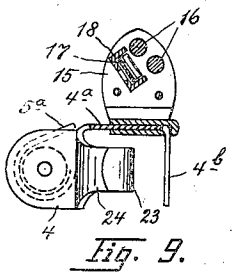


Fig. 9.

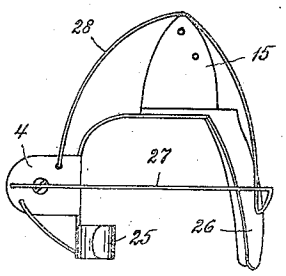


Fig. 14.

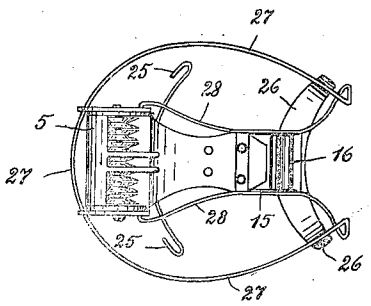


Fig. 15.

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SUPPORT FOR THE ELASTIC IN BALL GAMES WITH ATTACHED BALL

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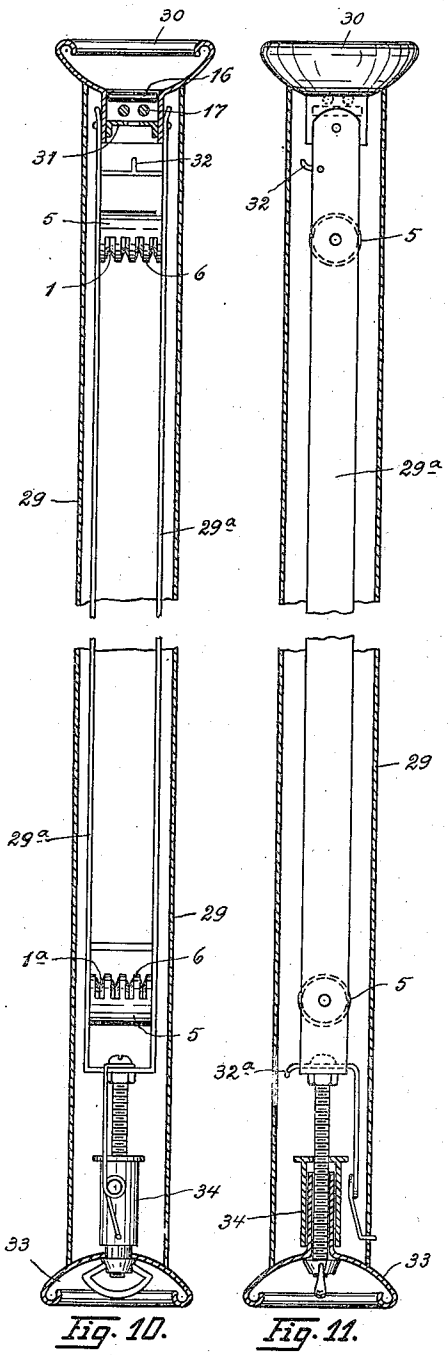


Fig. 10.

Fig. 11.

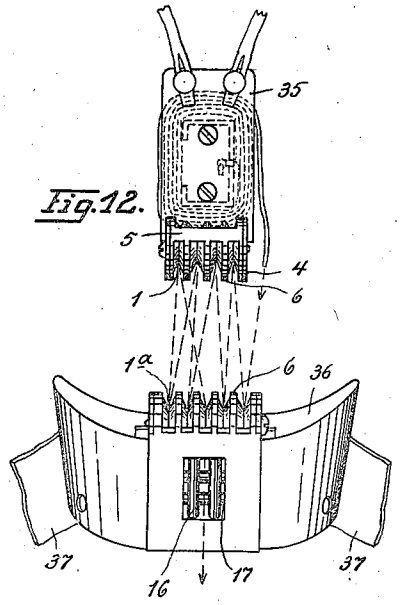


Fig. 12.

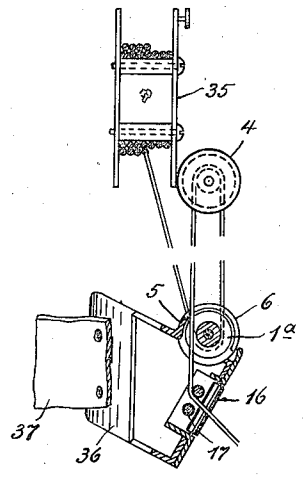


Fig. 13.

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Patented Aug. 30, 1938 2,128,610

UNITED STATES PATENT OFFICE

2,128,610

SUPPORT FOR THE ELASTIC IN BALL GAMES WITH ATTACHED BALL

Rodolfo Heimers, Mexico, D. F., Mexico

Application February 5, 1937, Serial No. 124,311
In Mexico February 8, 1936

4 Claims. (Cl. 273—97)

The invention refers to improvements in the supports for the elastic in ball games with attached ball, in which the ball secured to the end of a long elastic wound around two separated sets of rollers, can be thrown for a great distance and returns to its starting point. The invention has for its object certain improvements in the construction of the casings or supports enclosing the sets of rollers, especially in the way of attaching said casings or supports to the devices for throwing the ball, and in the means for increasing or reducing the length of the elastic so as to adjust and vary its tension and to dispose of a reserve of elastic in case of rupture of the thread.

The characteristic features of the invention are described in the following specification and shown in the accompanying drawings, in which similar reference numerals indicate identical parts throughout the figures shown.

Figure 1 represents the device for winding and supporting the elastic, applied to a tennis racket, shown from the back.

Figure 2 is a side view of the same racket.

Figure 3 shows on a bigger scale a set of rollers, its casing with clip for fixing it to the handle of the racket, and the wheel for winding the excess of elastic.

Figure 4 shows the same parts viewed from another side.

Figure 5 is a sectional view of the casing with the set of rollers with its guiding slots.

Figure 6 is a top view of another set of rollers, with side arms for securing it to the top of the racket, and with friction-reducing means for the passage of the elastic.

Figure 7 is a front view of the device shown in Figure 6, with a wire frame for averting the elastic.

Figure 8 is a cross sectional view of the device shown in Figures 6 and 7.

Figure 9 shows the same device with an extension for attaching it to a round bat.

Figures 10 and 11 are longitudinal cross sections in two directions of a hollow tube for another ball game, with the rollers conducting the elastic mounted within the tube.

Figure 12 is a front view of a device for playing foot ball with the ball attached.

Figure 13 is a side view of the device shown in Figure 12, partially in cross section.

Figures 14 and 15 are views, respectively from the side and from above, of a modification of the device shown in Figures 6 and 7, adapted to be attached to the top of a base ball bat.

The sets of rollers 1 and 1a, around which is wound the elastic 2 in a number of turns, are mounted to rotate on shafts 3, the ends of which pass through the sides of U-shaped members or casings 4. Between these sides are mounted from the inside the bent extremities of a curved plate 5 provided with slots coinciding with the grooves of the rollers or wheels 1 and 1a, and which form a number of tongues 6 extending around the edges of each two adjacent rollers, said tongues extending to the bottom of the U-shaped members 4 on the side toward which the turns of the elastic stretch from one set of rollers to the other set. On the opposite or back side, the curved plate 5 is spaced from the bottom of said member for a sufficient distance to permit the placing of the elastic around the rollers. The tongues 6 form thereby a guard around the edges of adjacent rollers, as shown in Figures 3, 4, 6, 7 and 12, in order to prevent the elastic from leaving the grooves in said rollers. In case of rupture of the elastic, the free end of said elastic, on returning in a direction not exactly perpendicular to the rollers, will generally be caught and held in the first turn, jamming between the edge of the roller and the guard 6 surrounding said edge completely or partially. Small projections or washers 7 (Figure 5) between the rollers reduce the friction during their rotation.

The rollers 1 with their casing and guard as described, are secured to the handle of the racket shown in Figures 1 and 2 by means of a clip 8 of more or less semi-circular shape provided on the base of the casing 4 and having its extremities doubled or bent in the form of hooks 9 to be united by rubber bands 10 (Figure 2), placed around the opposite side of the handle and which, owing to their tension and adhesive properties, firmly secure the clip 8 to the handle, upon being stretched repeatedly between the hooks 9.

The means for winding the excess length of elastic comprises, in the racket of Figures 1 and 2, a big wheel or drum 11, with a handle 12, the shaft of this wheel passing preferably with its threaded end through a nut 13 disposed within the branches of one of the hooks 9. When this shaft is loosened, the wheel 11 can be rotated, and when its head 14 is screwed down, it is held firmly, so that the elastic may be wound and unwound thereon or may be held wound at any desired tension.

In the embodiment shown in Figures 8 and 9, the bottom of the casing 4 supporting the rollers 1a has a lateral extension bent at a right angle, on which is placed and secured the U-shaped

bottom of another casing 15, between the sides of which are disposed two parallel rollers 16 spaced one from the other and which, together with another pair of rollers 17, also spaced and placed transversally to the rollers 16, form the device for reducing the friction of the elastic passing through the center of the four crossed rollers. The rollers 17 rotate in a separate casing 18 disposed between the sides of the casing 15 and provided with a hole 15a (Figures 7, 8, and 9) through which passes the elastic before it enters the friction-reducing means. In the same Figures 7, 8, and 9 is also shown a guide for conducting the elastic passing from the central roller of the set to the hole 15a, and which consists of two extensions 5a of the curved guard 5 which bear with their extremities against the bottom of the casing 4 and between which passes the elastic.

In order to secure the support described of the rollers 1a and of the casing containing the friction-reducing means, to the hoop of the racket, two arms 19 have been provided which extend laterally from the part bent at right angle 4a of the casing 4, and each of which carries two or more doubled tongues 20 and 20a provided at opposite sides, forming hooks for attaching other rubber bands 21 (Figures 1 and 2) which surround the hoop. This form of attachment provides a rigid and at the same time resilient union which does not deteriorate the finish of the racket and which owing to its elasticity endures the blows from the returning ball, as it gives way on receiving the blow and returns instantly to its former position. Furthermore, the devices described may be attached in a few seconds to any racket and may be taken off rapidly by removing the rubber bands from their hooks.

The guards 22 of steel wire, shown in Figure 7 and extending from the sides of the casing 4 and from the upper ends of the casing 15 to the ends of the arms 19, serve to protect these parts against injury caused by the racket striking the ground or by other accidents, but they also serve to prevent the loose elastic from being caught in said parts when the racket is handled in a wrong way or when the elastic is used very loose and without much tension as is the case when the ball is to be thrown at a great distance, or for obtaining the different effects on the ball used in real tennis play.

In the embodiment of the invention described, for substituting the game of tennis or for preliminary practice of the game, the balance of the racket need not be altered. A racket provided with the devices described, permits hitting the ball from both sides, notwithstanding the turns of elastic crossing one side, so that reverse strokes may also be executed without difficulty. A racket of this kind not only permits the performance of all the strokes known in tennis play, but also permits several new effects on the ball to be effected, derived from the continuous union of the ball with the racket, which makes possible a change in the direction of the throw, both of the ball on being thrown and of the ball returning to its starting point.

The invention further refers to a number of modifications for different other games in which the free ball is substituted by an attached ball. The supports and devices for maintaining the elastic within the grooves of its rollers, and for securing them to the different instruments or implements used for throwing the ball, only differ in some small details from those already described and adapted for tennis rackets, and their function is the same whether used for golf, hocky, base ball, foot ball, the Spanish games played with flat wooden bats or with woven baskets attached to the arms, or other similar kinds of ball games.

According to the characteristics of each of these games, the additional parts: (1) casings for the friction-reducing means for the elastic; (2) sets of rollers for the elastic, and (3) winding means for the excess of elastic, are either adapted directly to the outside or inside of the ball-throwing device, or one part of them is attached to the instrument and the other part to points distant from said instrument, for instance to the body of the player, to the ceiling, to the ground, and even to points entirely separated from the player.

The first case occurs with the tubes or bats for striking the ball and with the tennis racket, as described before, and in general with all the other ball games in which bats or similar implements are used, such as base ball, hockey, the wooden bats for the Spanish game of "pelota", and so forth.

The second case presents itself in the Spanish game of ball played with a long curved basket attached to one hand of the player and with which the ball is thrown and caught.

The third case occurs especially by adapting the invention to the game of foot ball, as will be described later, in which it is necessary to move the arms and legs freely, and also in the game of golf in which the plurality of differently shaped clubs used does not permit the adaptation of the devices described to each one of the clubs.

Several of these applications have been shown in Figures 9 to 15. Figure 9 shows, partially in cross section, the device represented in Figure 8 and used for the tennis racket, with the difference that the casing 4 carries on its bent part 4a an extension or arm 4b directed downwardly, so as to enable the device to be attached to the end of a round bat or similar implement. In this case, the rubber band passing around the hooks 23 provided at the ends of the curved arms 24 united with said casing, also passes with its turns over the extension 4b and presses it against the bat.

A similar construction is illustrated in Figures 14 and 15 and adapts itself especially to the extremity of a base ball bat. Below the casing 4 supporting the rollers, two curved arms 25 with hooks at their ends are provided, and on the opposite side there are other two arms 26 directed downwardly. A curved guard 27 made of wire passes through the casing 4 and afterwards extends rearwardly, around the arm 26, its ends being also doubled in form of hooks. The rubber band passes from the forward hooks of the arms 25 to the hooks of the guard 27, over the arms 26, pressing the device firmly against the bat. There may also be provided another guard of curved wire passing around the top of the sides of the box 15, on both sides, and united with the ends of the wire 27, in which case the arms 26 may be omitted.

In Figures 10 and 11 are shown rollers 1 and 1a, with their guards 5 and guides 6, mounted between two strips 29a introduced in a tube 29. To the upper end of this tube is affixed a hollow mouth piece 30, in the bottom of which are placed the friction-reducing means composed of the crossed rollers 16 and 17. A hole in a trans-

versal division 31 below said rollers serves as a guide for the elastic connected to the ball, after it has been wound a number of times around the rollers of both sets. The two hooks 32 and 32a serve to support a reserve length of elastic. For winding the excess of elastic or for giving it the desired tension, the cylinder 34, on which the end of the elastic has been wound, is rotated by means of the lower mouth piece 33 of the tube.

Finally, Figures 12 and 13 show the invention applied to the game of foot ball. A casing 35 with a middle portion around which the elastic has been wound, is suspended from the neck of the player by a leather strap. On one side of the lower part of this casing is mounted the casing 4 supporting one of the sets of rollers, with its corresponding guiding tongues 6. A device in form of a curved box 36 encloses in its upper part the second set of rollers, and below there is a hole, at the back of which are mounted the crossed rollers 16 and 17 serving as friction-reducers. This box 36 is attached to the leg, above the knee, by means of a leather strap 37. The elastic starts from the wound portion of the casing 35, passes in a plurality of turns around the rollers 1 and 1a of the two sets, and leaves through the friction-reducing means 16—17, its end being attached to the ball. The considerable length of the elastic between the two sets of rollers permits the ball to be kicked a long distance, without losing the complete liberty and control of the arms and legs.

What I claim is:

1. A ball throwing device having a ball attached thereto by elastic means and having supports comprising sets of rollers supporting the elastic in a plurality of turns and preferably under tension, guards covering the edges of said rollers on the side toward which the elastic is stretched from one set of rollers to the other, means supporting each set of rollers and guards, and means for securing said supporting means to spaced portions of the ball throwing device.

2. A ball throwing device having a ball attached thereto by elastic means and having supports comprising spaced sets of rollers between which the elastic is stretched in a plurality of turns, guards placed partly around the edges of the rollers, means supporting each set of rollers and their guards, resilient means for detachably securing said supporting means to the ball throwing device, and winding means holding an excess of elastic.

3. A ball throwing device having a ball attached thereto by elastic means and having supports comprising spaced sets of grooved rollers supporting the elastic in a plurality of turns, guards covering said rollers and provided with slots coinciding with the grooves in said rollers for maintaining the elastic within said grooves, friction-reducing means preferably consisting of crossed pairs of rollers provided in the path of the elastic between said rollers and the attached ball, a supporting member for each set of rollers, and winding means for taking up an excess of elastic.

4. A ball throwing device having a ball attached thereto by elastic means and having supports comprising sets of grooved rollers supporting the elastic in a plurality of turns, guards preventing the elastic from leaving the grooves of said rollers, guiding and friction-reducing means provided in the path of the elastic between said rollers and the attached ball, members supporting said rollers and said guiding and friction-reducing means, means provided on said members for averting the returning elastic and preventing it from being caught between protruding parts, winding means for taking up an excess of elastic, and resilient detachable means securing said supporting members to the ball throwing device.

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