Nov. 8, 1966 A. DE MEYER 3,284,050

CLAMPING TENSIONED STRINGS FOR THE STRINGING OR RESTRINGING OF RACKETS

Filed Feb. 17, 1965

Fig. 1

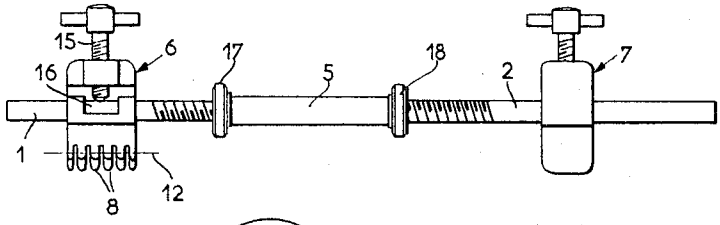


Fig. 2

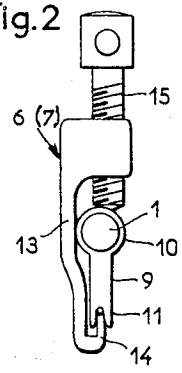


Fig. 2A

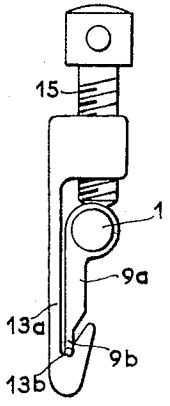


Fig. 3

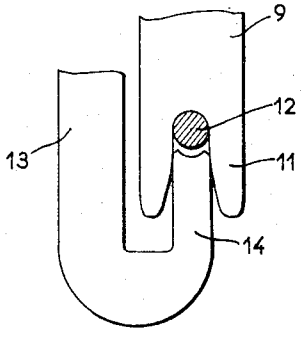


Fig. 5

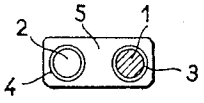
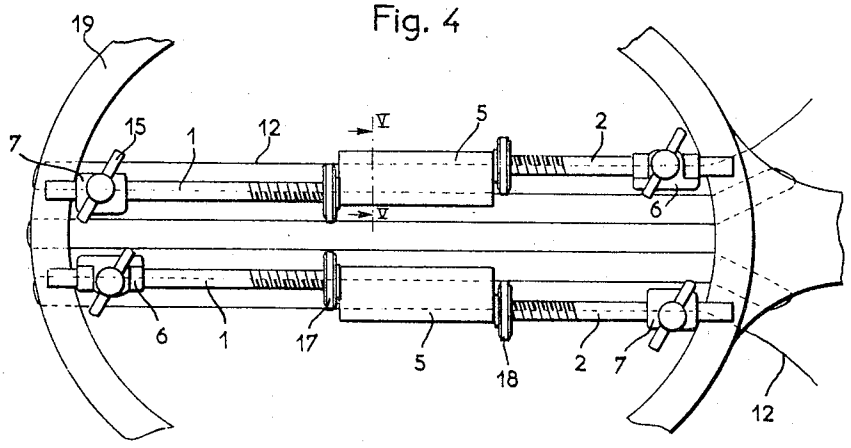


Fig. 4



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CLAMPING TENSIONED STRINGS FOR THE STRINGING OR RESTRINGING OF RACKETS

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7 Claims. (Cl. 254—67)

The invention relates to a system for clamping tensioned strings for the stringing or restringing of tennis rackets or the like.

Conventionally, in these operations each tensioned string or gut is temporarily trapped either by a punch or by a wedge temporarily introducted into the corresponding aperture in the racket frame or by the cord being clamped by a flatnosed vice which bears against a place disposed outside the frame, in order to maintain the tension while the gut is threaded into the apertures for the next string to be tensioned or while the fixing knot is made at the end of a string, whereafter the wedge can be removed. An inevitable concomitant of this procedure is that the wedge tends to flatten the gut; also, the gut apertures in the frame tend to become widened out, with the result that the gut tends to break rapidly near the gut apertures and the frame has a very short life. Another disadvantage of the known procedure is that it is almost impossible to maintain gut tension at the value achieved at the exact moment when the wedge is positioned.

It is an object of the invention to obviate these disadvantages and to provide a simple system which is disposed on the strings inside the frame and which requires no bearing place outside the strings.

According to the invention, the system mainly comprises two vices engageable on the string which it is required to keep tensioned, the vices being disposed at opposite end parts of rigid support member of preferably variable length, the vices being adapted to be placed on the strings inside the racket frame so that they can be brought substantially in contact with opposite sides of the frame, then to be clamped to the support member at the required length and the vices to be clamped to the particular string concerned. The string is therefore maintained exactly at the tension originally imparted to it, for the vices are almost in contact with the frame and the rigid support member ensures that the vices stay in their position; nothing has to be introduced into the gut holes in the frame and so the gut holes cannot distort.

In a preferred form of the invention, the support member comprises two rods, one of the vices being slidably mounted on an end part of each rod, means being provided to clamp each vice in any required position on its rod, the other end of each rod being screwthreaded and engaging in one of two apertures with which an intermediate block is formed with a lateral offset corresponding substantially to the spacing between two consecutive strings of the racket, a nut being disposed on the screwthreaded part of each rod so as to be able to contact the block when the vices are substantially in contact with the frame. This feature enables the device to be shifted from one string to the next readily, for the intermediate block and one of its rods and the associated vice can be turned through 180°, so that such vice can readily be engaged with the next string while the other vice is still in engagement with the previous string.

Other features and advantages of the invention will be disclosed by the following description of embodiments of the invention, reference being made to the accompanying drawings wherein:

FIG. 1 is a side elevation of a system according to the invention;

FIG. 2 is an end view of a vice to an enlarged scale;

FIG. 2*a* shows a variant of FIG. 2;

FIG. 3 is an end view to an even larger scale of a part of the vice shown in FIG. 2;

FIG. 4 is a fragmentary plan view of a racket frame and of two systems according to the invention during stringing, and

FIG. 5 is a view to an enlarged scale along the section line V–V of FIG. 4.

Referring to the drawings, the system according to the invention comprises two rods **1**, **2** each having a screwthreaded portion engaged in a respective aperture **3**, **4** in an intermediate block **5**, and a plain portion on which a respective vice **6**, **7** is slidably mounted, means being provided to clamp each vice to its rod. The vices **6**, **7** are of the same general construction and cross-section and differ only in their width and in that the vice **6** is formed with grooves **8** at a spacing corresponding to the string spacing of the racket. The vice **7** can deal with strings extending lengthwise of the racket, but the vice **6**, as well as being able to deal with lengthwise strings, can also deal with strings extending widthwise of the racket, the grooves **8** engaging in this case with some already positioned longitudinal strings. The vice **6** is therefore of use for replacing one or more strings of a racket.

A vice comprises a slider **9** having a lug or loop or the like **10** engaging with the plain part of the rod **1** (or **2**), the slider **9** in shape resembling a plate having one forked end **11** adapted to engage with a string or gut **12**. The vice also comprises a hook **13** terminating in a bent part **14** engageable in the groove in the forked end **11**. The other end of the hook **13** is formed with a tapped aperture receiving a clamping screw **15** whose end is adapted to extend through a window **16** in the slider lug **10** so as to be able to act directly on the rod **1** and clamp the vice **6** thereto. For effective clamping, the axis of the screw **15** is offset from the axis of the slider **9** in the manner visible in FIG. 2. Once the slider **9** has been positioned on a gut and if the screw **15** is slackened, the hook **13** can readily be positioned, whereafter the screw **15** is tightened to clamp the vice to its rod and to clamp the gut over a relatively great length corresponding to the length of the slider **9** and bent part **14**—i.e., without risk of damaging the gut.

A nut **17**, **18** respectively is placed on the screwthreaded portion of the rod **1**, **2** respectively. To use the system, the position of the nuts is adjusted so that the system formed by the elements **1**, **5**, **2** has a length roughly approaching that of the gut which it is required to tension. The last-mentioned system together with the sliders **9** is placed on the gut which it is required to tension, tensioning being effected by any appropriate known means. The hooks **13** are then engaged and the vices are moved until they almost contact the inside of the racket frame **19**, whereafter the screws **15** are tightened to clamp the vices to the gut. If required, the length of the system formed by the elements **1**, **5**, **2** can be adjusted by the nuts **17**, **18** so that this rigid system maintains the particular gut concerned at its correct length and tension, when the pull applied to the free end of the gut is cut out and such end can be engaged in the apertures in the frame **19** for the adjacent string. Once the adjacent string has been tensioned, the system according to the invention is released from the previous string and engaged on the new string. The staggered apertures in the block **5** facilitate this operation, since either vice **6** or **7** can be released and placed on the next string just by the block **5** being rotated through 180° so that the system comes into the intermediate position visible in FIG. 4, whereafter the operation is repeated for the second vice so that both vices are placed in the operative position on the same string. It will be obvious that the said so-called inter-

mediate position can advantageously be used as the active position, so that it will be sufficient to displace one vice after tensioning of a string.

To prevent damage to the gut **12**, the groove in the forked end **11** has a rounded and substantially semicircular shape; the end of the bent part **14** is shaped similarly and its two end edges are, with advantage, cut with a slight rounding, to obviate any notching of the gut and to facilitate engagement of the bent part **14** in the forked end **11**.

Using two systems according to the invention makes it easy to provide a completely symmetrical stringing.

The system according to the invention can of course be modified in many ways without departure from the scope of the invention. For instance, the rigid support member for the vices, instead of being formed by the elements **1**, **5**, **2** as shown, can comprise two rods **1**, **2** which stay in extension of one another, or just a single and possibly telescopic rod. Similarly, the vices can be embodied in any way enabling them to be clamped in the required position on the rigid support member and enabling them to clamp the gut satisfactorily. The screws **15** can be replaced by clamping cams or the like.

FIG. 2*a* shows an alternative form of vice, where the end of the hook **13***a* is formed with a recess or groove or the like **13***b* adapted to receive the gut **12** which is clamped by the end of the slider **9***a*, the latter end being formed with a rounded recess **9***b*. A spindle (not shown) can be secured to one of the elements **9***a* or **13***a* and can engage in a vertical slot in the other of such elements so that the same may slide relatively to one another far enough for the end of the slider to disengage from the recess in the hook and for the vice to be able to be placed on a gut and removed therefrom without detaching the two elements of the vice.

I claim:

1. In a system for clamping tensioned strings within a racket frame when stringing or restringing rackets, a variable-length rigid support member comprising a block having apertures therein and further comprising a pair of rods at opposite ends of said block, each rod being disposed within an aperture, means for maintaining each rod in a determined position with respect to said block, a pair of vices, one vice mounted on a single one of each rod and being axially slidable with respect thereto, each vice being adapted to be placed on a string inside the racket frame at a position on said string near the racket frame, and means on each vice for clamping said vice in a predetermined position on its rod and simultaneously gripping the said string in the vice.

2. A system as set forth in claim **1** wherein said block is provided with two apertures which are laterally offset in correspondence with the spacing between two consecutive strings of a racket.

3. A system as set forth in claim **2** wherein the means for maintaining at least one of the rods in a determined position with respect to said block comprises a threaded portion on said rod for accommodating a nut which is adapted to contact said block.

4. A system as set forth in claim **3** wherein said means for clamping comprises a slider having a loop which engages around a rod and which is formed with an aperture, the slider having a hook, one end of which is in the form of a bent part while the other end comprises a clamping element acting on the rod through the aperture in the loop, the bent part and the end of the slider nesting one into the other to clamp a string between them, one of the two nested elements being formed with a groove for receiving the end of the other nested element.

5. A system as set forth in claim **4** wherein said other nested element is formed with a substantially semicircular rounded recess.

6. A system as set forth in claim **4** wherein the clamping element is a clamping screw whose axis is offset from the slider axis.

7. A system as set forth in claim **4** wherein the free end of said hook is formed with slots at substantially the same spacing from one another as the string spacing.

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