

Sept. 9, 1969

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 APPARATUS FOR TENSIONING OF TENSION
 ROPES IN GYMNASTIC APPARATUS
 Filed May 2, 1967

3,466,024

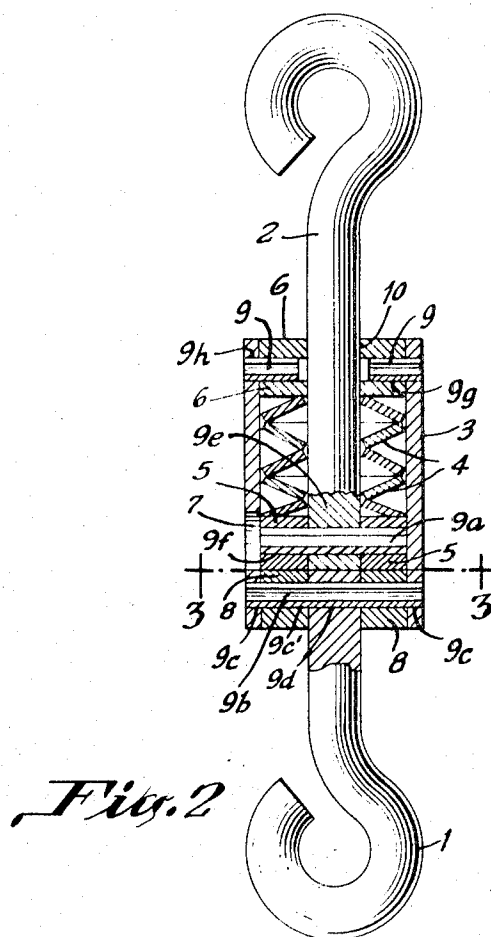
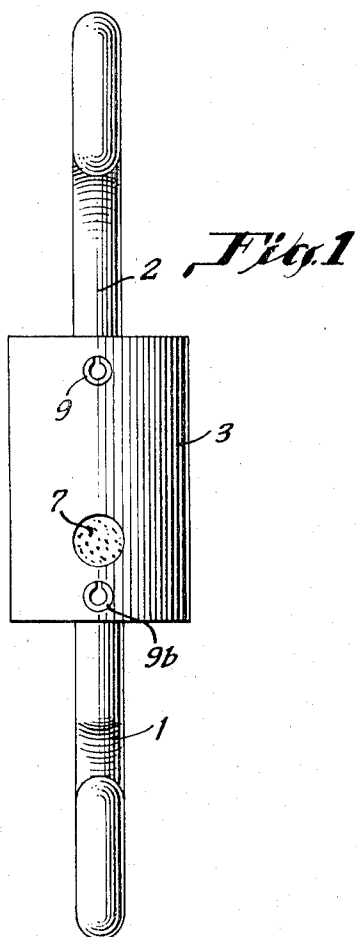
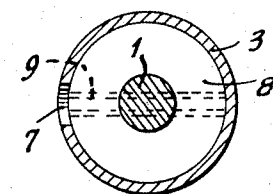
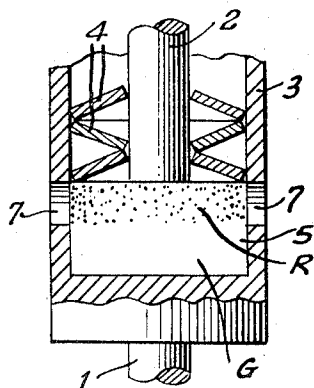


Fig. 4



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APPARATUS FOR TENSIONING OF TENSION ROPES IN GYMNASTIC APPARATUS

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Filed May 2, 1967, Ser. No. 635,521

Claims priority, application Germany, May 3, 1966,

S 56,932

Int. Cl. F16g 11/12; F16f 1/32

U.S. Cl. 267—69

6 Claims

ABSTRACT OF THE DISCLOSURE

An apparatus for tensioning of tension-cords of double bars, horizontal bars and the like, which comprises a housing, two anchors disposed in and projecting oppositely from the housing. Furthermore, spring means are provided which are disposed in the housing and tend to urge one of the anchors into the housing. A movable member includes a spring plate in the housing which guides directly one of the anchors and an immovable member includes likewise a spring plate and guides indirectly the one of the anchors.

The present invention relates to an apparatus for tensioning of tension-ropes in gymnastic apparatus, for instance for double bars, horizontal bars, and the like.

It is one object of the present invention to provide an apparatus for tensioning of tension-ropes in gymnastic apparatus, which comprises an accumulator of the spring force with two anchors, a housing and a spring arrangement, whereby at least one of the anchors is guided in the housing over a spring plate directly, as well as in addition indirectly in an immovable spring plate.

It is another object of the present invention to provide an apparatus for tensioning of tension-ropes in gymnastic apparatus, wherein the housing has at least one window for the displaceable or movable spring plate, so that its adjustment stroke can be read from the outside.

Such apparatus offers the gymnast the appreciable advantage that the latter can adjust the apparatus very fast. No testing is required for the purpose of determining the presence of the best pretension, particularly when different marks indicate the different adjustment values of the tension.

With these and other objects in view, which will become apparent in the following detailed description, the present invention will be clearly understood in connection with the accompanying drawing, in which:

FIGURE 1 is a top plan view of an apparatus designed in accordance with the present invention;

FIGURE 2 is a longitudinal section of the apparatus, disclosed in FIG. 1;

FIGURE 3 is a section along the lines 3—3 of FIG. 2; and

FIGURE 4 is a fragmentary section of the apparatus, designed in accordance with the present invention disclosing two different markings for two different values of tension.

Referring now to the drawing, the embodiment of the apparatus disclosed therein comprises two tension cords which are adjustable by means of a turn buckle, and between which tension cords the apparatus is suspended and comprises three main elements, namely an anchor 1, a tubular housing 3 and a spring plate 6 constituting an immovable member secured to the housing 3 at one end by two radial tube pins 9 radially spring biased passing through the housing and spring plate 6. The spring plate 6 has an axial opening through which an anchor 2 slidably extends. The anchor 2 is secured at its free end in and to a spring plate 5 constituting a movable member by a

diametric pin 9a spring biased in the radial direction passing through the free end of the anchor 2 and the spring plate 5. The spring plate 5 is slidably disposed in the housing 3 and spring means 4 (plate springs) pretensioned under certain circumstances are disposed between the plates 5 and 6. An intermediate ring 8 closes the other end of the housing 3, being disposed therein, and the anchor 1 radially passes axially into the ring 8, the ring 8 and anchor 1 being secured axially theretogether and to the housing 3 by a tube pin 9b extending from one side of the housing 3 through the ring 8 and anchor 1 to the other side of the housing 3. The tube pins 9 are slotted tubes of resilient steel.

The tube pin 9b extends through diametrically opposite openings 9c in the housing 3, a diametric opening 9c' through the intermediate ring 8 and through an aligned diametric bore 9d in an end of the anchor 1. The length of the tube pin 9b is substantially equal to the outer diameter of the housing. Accordingly the anchor 1, the intermediate ring 8 and the housing 3 are jointly secured together precluding relative axial and rotatable movement.

The tube pin 9a extends through a diametric bore 9e in an end of the anchor 2 and a diametric opening 9f in the spring plate 5, thereby securing the latter to the anchor 2; however, the length of the tube pin 9a is smaller than, or at most equal to, the interior diameter of the housing and accordingly the spring plate 5 and anchor 2 secured thereto, can slide axially relative the housing 3.

The two tube pins 9 each extend radially in one half of a diametric opening 9g in the spring plate 6 and through one of two diametrically opposite openings 9h in the housing 3, thereby securing the spring plate 6 to the housing. The anchor 2 extends through an axial opening 10 in the spring plate, and accordingly can slide relative thereto. The spring plate 5 and the intermediate ring 8 also have axial openings in which the ends of the anchors 2 and 1 pass for connection by the tube pins 9a and 9b respectively.

The housing 3 is colored on the outside different than the spring plate 5, which is, for instance, nickel-plated. If the apparatus during tensioning of the gymnastic device is pulled apart, the spring plate 5, which constitutes a visible marking of the degree of tension visible to the outside, leaves its position behind the window 7, at first partly and then completely. The path performed by the mark is a measure for the size of the rope tension. As a rule, the springs are measured in such manner and such strength, that the spring plate has abandoned nearly the window 7 upon reaching the most favorable rope tension and the instructor sees instead of the shiny spring plate 5 merely a dark recess.

Referring now again to the drawing, and in particular to FIG. 4 thereof, the cylindrical periphery of the spring plate 5 is equipped with two different colors R and G so that, upon tensioning of the tensioning ropes (not shown), for instance, by means of a known turn buckle, successively three markings, are visible adjacent each other, namely at first the zone R and then the zone G and then the dark recess.

I claim:

1. An apparatus for tensioning of tension-cords of double bars, horizontal bars and the like, comprising:
 - a tubular housing,
 - two anchors disposed in and projecting axially oppositely from said housing,
 - a movable member comprising a first spring plate axially movably disposed in said housing guiding directly at least one of said anchors,
 - said first spring plate formed with a first axial opening and a first diametric opening therethrough,

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said at least one of said anchors having an end extending into said first axial opening and formed with a first diametric bore,

a first diametric pin having a length at most equal to the interior diameter of said housing and positioned through said first diametric opening of said first spring plate and said first diametric bore of said at least one of said anchors thereby securing the latter to said first plate spring,

an immovable member comprising a second spring plate guiding indirectly said at least one of said anchors,

said second spring plate closing one end of said housing and formed with a second axial opening through which said at least one of said anchors slidably extends,

said second spring plate having a second diametric opening therethrough,

said housing formed with first diametrically opposite openings aligned with the ends of said second diametric opening,

two radial pins each extending through said one of said diametrically opposite openings and said second plate spring through half of said second diametric opening thereby securing said second plate spring to said housing,

spring means compressingly disposed in said housing between said first and second spring plates and tending to urge said at least one of said anchors into said housing,

said other of said at least one of said anchors operatively connected to said housing,

said housing includes a window open to the outside thereof, and

marking means on the circumferential surface of said first spring plate adjacent said window and constituting an indicator for the path of said spring means to operate as a cord-tension meter.

2. The apparatus, as set forth in claim 1, wherein: said spring means comprises a plate spring column.

3. The apparatus, as set forth in claim 1, wherein: said anchors each formed with a hook at their remote ends,

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said housing formed as a cylindrical tube, and said first and second spring plates have cylindrical circumferences complementary to the interior of said cylindrical tube.

4. The apparatus, as set forth in claim 1, wherein: said radial pins and said diametric pins are longitudinally slotted tubes and spring biased in the radial direction.

5. The apparatus, as set forth in claim 1, wherein: said marking means comprises at least one color visible through said window.

6. The apparatus as set forth in claim 1, further comprising:

an intermediate ring closing said other end of said housing and formed with a third axial opening and a third diametric opening,

said other of said at least one of said anchors having an end extending into said third axial opening and formed with a second diametric bore,

said housing formed with second diametrically opposite openings aligned with the ends of said third diametric opening,

a second diametric pin extending through said second diametrically opposite openings in said housing, said third diametric opening in said intermediate ring and said second diametric bore in said other of said at least one of said anchors, thereby securing the latter, said intermediate ring and said housing jointly together.

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U.S. Cl. X.R.

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