United States Patent [19]

Palma

[11] **3,826,239**

[45] **July 30, 1974**

[54] **ARCHERY BOW WITH BOWLIMB TENSIONING DEVICE**

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[52] **U.S. Cl.** ..... **124/23 R,** 124/30 R

[51] **Int. Cl.** **F41b 5/00**

[58] **Field of Search** ..... 124/23 R, 24 R, 30 R, 25, 124/22

[56] **References Cited**

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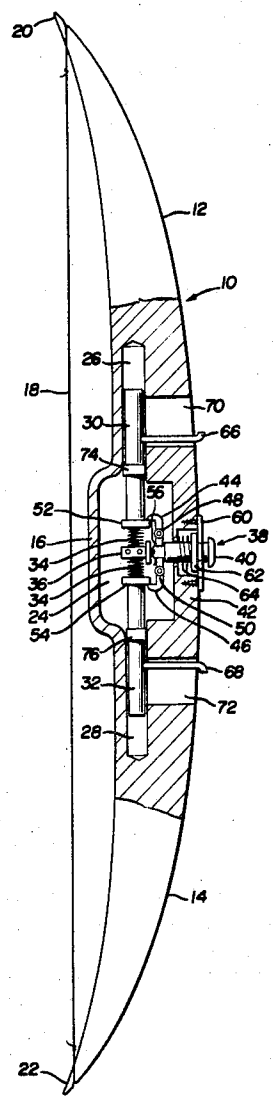
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Primary Examiner—Richard C. Pinkham
Assistant Examiner—William R. Browne
Attorney, Agent, or Firm—Oltman and Flynn

[57] **ABSTRACT**

A bow in which reinforcing members can be propelled toward each of the bowlimbs to change the tension of the bowlimbs quickly. The reinforcing members are normally retracted and held in a cocked position against the bias of springs. Energy storage propulsion device is triggered to permit the extension of the reinforcing members along the bowlimbs. Retractor projections are manually operated on to withdraw the reinforcing members against the bias of the springs.

6 Claims, 2 Drawing Figures



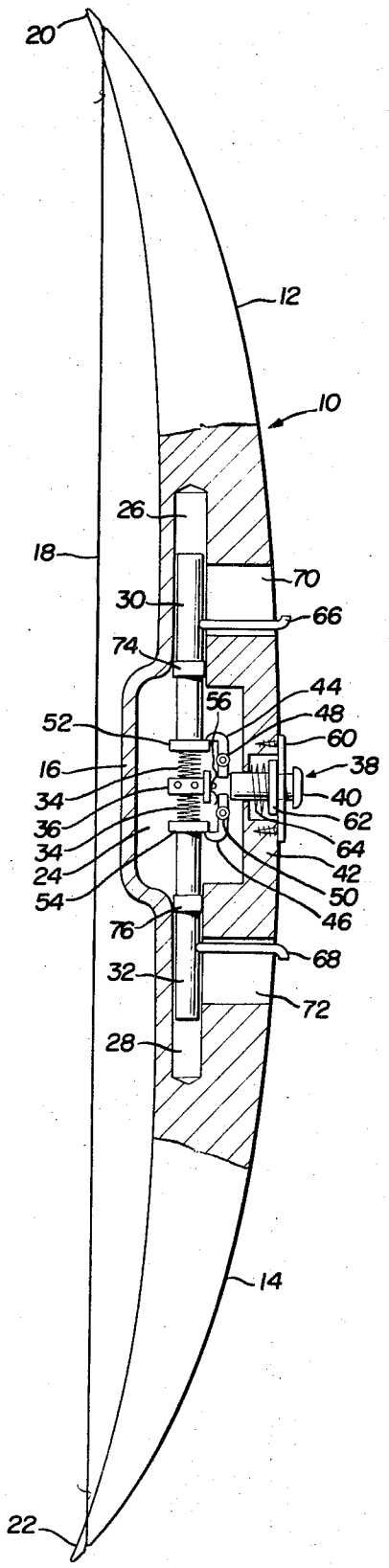

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FIG. 1

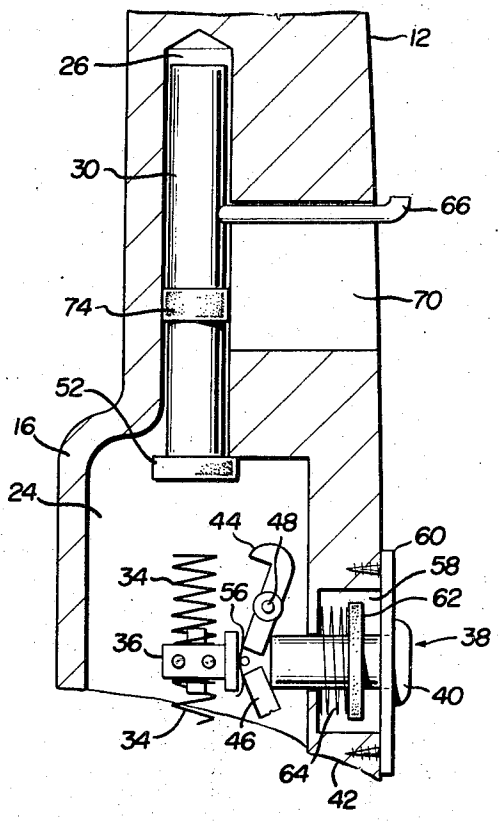

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FIG. 2

ARCHERY BOW WITH BOWLIMB TENSIONING DEVICE

BACKGROUND OF THE INVENTION

An adjustable bow is described and claimed in U.S. Pat. No. 3,625,193 issued to the present inventor. In that device, a drive mechanism is operated to move two reinforcing members back and forth in cavities in the bowlimbs for adjusting the tension of the bowlimbs. Another adjustable bow is described and claimed in U.S. Pat. application, Ser. No. 272,738 filed July 18, 1972 by the present inventor in which a separate drive is provided for each of two reinforcing members for adjusting the tension of one bowlimb separately from the other. A coarse adjustment and a fine adjustment of tension may also be accomplished by providing more than one reinforcing member for each bowlimb. In these prior devices, the drive means is continuously varied to move the reinforcing member or members to any desired position. It has been found that in some cases a quick change of tension from one extreme to another would be desirable.

SUMMARY OF THE INVENTION

The bow of the present invention includes reinforcing members movable relative to the bowlimbs of the bow, energy storage propulsion means for propelling the reinforcing members from a retracted position to an extended position, a trigger for actuating the propulsion means and retractor means for returning the reinforcing members to the retracted position. Thus, the tension of the bowlimbs can be changed quickly from one extreme to another.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is an elevational view, partly in section, of a bow in accordance with one embodiment of the invention; and

FIG. 2 is an enlarged fragmentary view showing a reinforcing member in an extended position after operation of a trigger.

DETAILED DESCRIPTION

The bow **10** includes bowlimbs **12** and **14**, a handle **16**, and a bowstring **18** interconnecting the two tips **20** and **22**. A cavity **24** in the handle **16** has extensions **26** and **28** leading into the bowlimbs **12** and **14**.

A pair of reinforcing members **30** and **32** are provided for reinforcing the bowlimbs **12** and **14**. The reinforcing members **30** and **32** are normally in the retracted position shown in FIG. **1** wherein the tension adjustment of the bow is minimized. The reinforcing members **30** and **32** are movable to extended positions such as that shown in FIG. **2** wherein the reinforcing member **30** has moved into the cavity extension **26** to produce a condition of maximum tension in the bow when the bowstring **18** is pulled.

The bow includes energy storage propulsion means **34** which in this embodiment consists of two coil springs. The coil springs **34** contact a base **36** fastened to the inside of the bow in the cavity **24**. In FIG. **1**, the upper spring **34** contacts reinforcing member **30**, and the lower spring **34** contacts reinforcing member **32**. When the reinforcing members **30** and **32** are in the retracted positions shown in FIG. **1**, the coil springs **34** are compressed. The coil springs **34** are capable of expanding to propel the reinforcing members **30** and **32**

longitudinally of the bowlimbs **12** and **14** into the cavity extensions **26** and **28** to maximize the tension adjustment of the bow.

Some other form of energy storage propulsion means may be utilized such as compressed gas.

The bow also includes a trigger means **38** for actuating the propulsion means **34**. In this embodiment, the trigger means includes a plunger **40** which extends between the inside and the outside of the bow through a wall **42**. The trigger means **38** also includes catch means in the form of two catch arms **44** and **46** which have pivot points **48** and **50**. The arms **44** and **46** are biased to a rest position in which they engage projections **52** and **54** on the reinforcing members **30** and **32** in order to retain the reinforcing members in the retracted positions. The biasing is done in this embodiment by a leaf spring **56** fastened to the base **36**. When the trigger plunger **40** is depressed from the position shown in FIG. **1** to the position shown in FIG. **2**, the arms **44** and **46** pivot in order to release the projections **52** and **54**, thus allowing the springs **34** to propel the reinforcing members **30** and **32** into the cavity extensions **26** and **28**.

Referring to FIG. **2**, it may be seen that the plunger **40** passes through a space **58** which is covered by a plate **60**. The plunger **40** has a stop projection **62**, and a coil spring **64** presses the stop **62** against the cover plate **60** when the plunger is in the extended position shown in FIG. **1**.

Retractors **66** and **68** are connected to the reinforcing members **30** and **32**. The retractors **66** and **68** are received in slots **70** and **72** which extend from the cavity extensions **26** and **28** to the outside of the bowlimbs **12** and **14**. The reinforcing members **30** and **32** may be returned to the retracted position shown in FIG. **1** by pulling the retractors **66** and **68** back toward the handle **16**. The reinforcing members **30** and **32** are preferably guided by enlargements **74** and **76**.

Thus, the invention provides a bow which can be quickly changed from a condition of minimum tension adjustment to a condition of maximum tension adjustment. The change of tension adjustments can be made at any time; that is, before the bowstring **18** is pulled, or even after the bowstring **18** is pulled and just as it is being released.

The bow may be fabricated in sections which are laminated together with the mechanism inside as described in the aforementioned patents. Alternatively, the mechanism may be constructed as a unit which may be clamped on to a conventional bow.

I claim:

1. In a bow having bowlimbs,

a pair of movable reinforcing means for varying the tension in said bowlimbs,

energy storage propulsion means for simultaneously projecting said first mentioned means a distance longitudinally of said bowlimbs,

trigger means for actuating said propulsion means,

and retractor means for retraction of said reinforcing means, said retractor means being spaced from the trigger means generally along the longitudinal axis of the bow.

2. A bow as claimed in claim **1** in which said propulsion means comprises a spring means for biasing each of said reinforcing means.

3. A bow as claimed in claim **2** in which said reinforcing means each have a projection extending therefrom,

and said trigger means includes catch means for retaining said projections in retracted positions, and plunger means for releasing said catch means.

4. A bow as claimed in claim **3** in which said catch means includes a pair of catch arms, means for pivotally mounting each of said arms, and biasing means for urging each of said arms to a rest position where said arms engage the projections.

5. A bow is claimed in claim **4** in which said retractor means includes a handle for each of said reinforcing means extending to the outside of said bow, and a slot in each of said bowlimbs for receiving a respective handle.

6. A bow as claimed in claim **5** in which said plunger means includes a plunger rod engageable with said catch arms, biasing means for urging said rod to an extended position, and a stop on said rod for stopping the same at said extended position.

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