ARCHERY BOW WITH BOWLIMB TENSIONING DEVICE

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References Cited

UNITED STATES PATENTS

261,610 7/1882 Howe 124/23 R
2,116,650 5/1938 Zima 124/23 R

3,625,193 12/1971 Palma 124/23 R

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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
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 the 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 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 spring 34 is 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 retractor 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 retractor 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,
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3 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 bowlims 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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