United States Patent

Hitt

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[54] ARCHERY BOW IN COMBINATION WITH DRAW FORCE MULTIPLYING MEANS

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[52] **U.S. Cl.** ..... **124/24,** 273/DIG. 7, 124/30 R

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

[58] **Field of Search** ..... 124/23, 24, 22, 35, DIG. 7, 124/41, 25, 30 R

[56] **References Cited**

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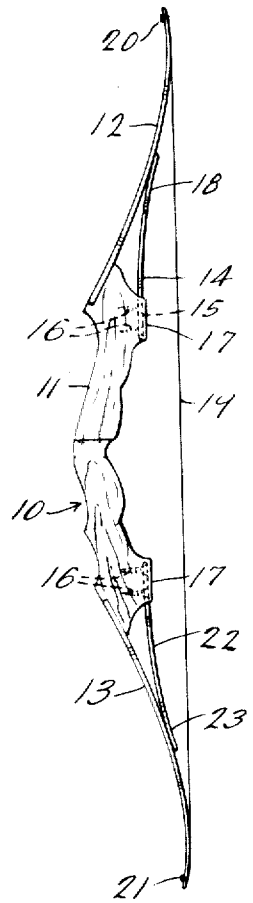
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[57] **ABSTRACT**

An archery bow having master limbs with auxiliary limbs extending from the belly side of the bow to a position rearwardly of the master limbs. The auxiliary limbs are positioned so as to resist the flexing of master limbs during the draw of a bow string, and thus increase the projectile propelling force of a bow.

4 Claims, 5 Drawing Figures



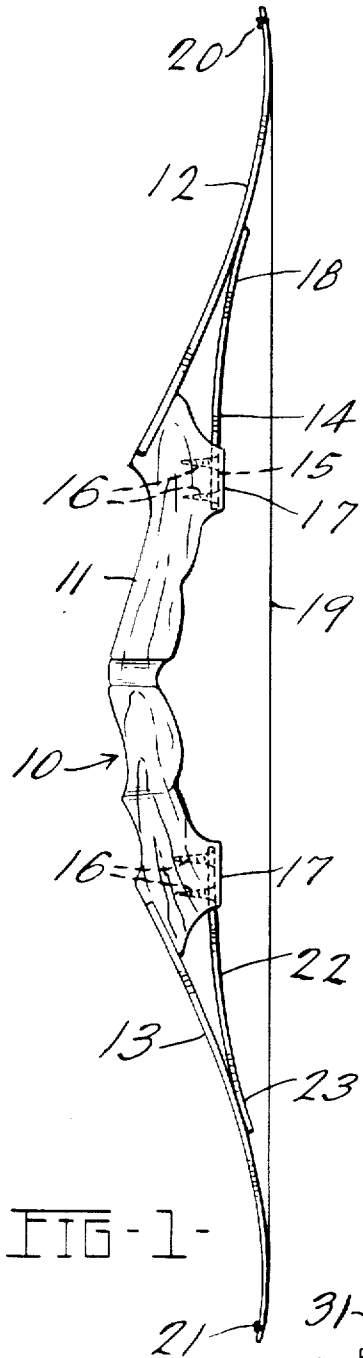


FIG-1-

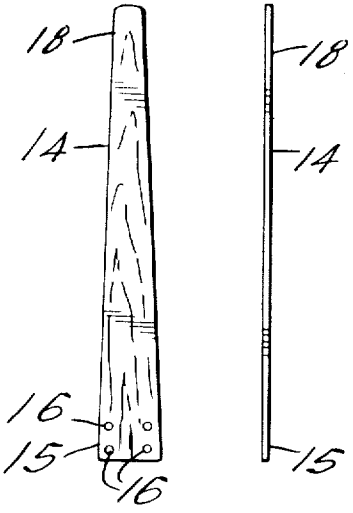


FIG-2-

FIG-3-

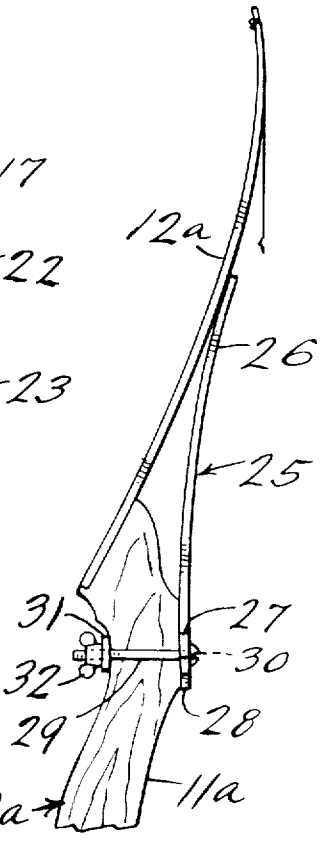


FIG-4-

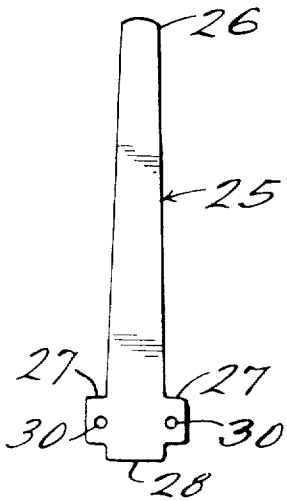


FIG-5-

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ARCHERY BOW IN COMBINATION WITH DRAW FORCE MULTIPLYING MEANS

BACKGROUND OF THE INVENTION

The force applied to an arrow is generated in the master limbs of an archery bow and is transferred through the bowstring to the arrow. The amount of force applied by the archer to the bowstring increases the force transmitted to the arrow from the master limbs. Good archery bows, particularly the master limb portion, are made from hard resilient materials. For many years, woods such as yew, osage orange and dagame were used in the construction of archery bows. More recently, the prior art has used laminates of wood and other materials, for examples fibrous glass and metal. The purpose of the laminates is to provide a highly resilient master limb structure which upon flexing generates the maximum amount of force relative to a given bowstring pull.

The present invention is an improved archery bow structure having at least one auxiliary limb which cooperates with an adjacent master limb to generate a cumulative force which ultimately acts upon the arrow.

It is the primary object of the present invention to provide an improved archery bow structure.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is an archery bow structure constructed according to the present invention;

FIG. 2 is a front view of the auxiliary limb of the archery bow, shown on an enlarged scale;

FIG. 3 is a side view of the auxiliary limb shown in FIG. 2;

FIG. 4 is a fragmentary side view of an auxiliary limb assembly positioned on a bow; and

FIG. 5 is a front view of the auxiliary limb shown in FIG. 4.

DESCRIPTION OF THE PREFERRED EMBODIMENTS

An archery bow according to the present invention is generally indicated in FIG. 1 by the reference number **10**. This particular embodiment of the archery bow **10** includes a handle section **11** and a pair of master limbs **12** and **13** which extend outwardly from the handle section **11** on the back side of the handle section **11**, in opposed relationship to one another. An auxiliary limb **14** has a first end **15** which is fixably connected to the upper portion of the handle section **11**, adjacent the belly side thereof, by a plurality of screws **16** (see FIG. **2**). In the present embodiment, the first end **15** and the screw heads are covered with a veneer **17** which preferably matches the remaining portion of the handle section **11**. The auxiliary limb **14** has a free end **18** which is positioned adjacent the master limb **12**.

When the master limb **12** is flexed, the auxiliary limb **14** is also flexed and force is transmitted between the auxiliary limb **14** and the master limb **12**.

A bowstring **19** extends between bow nocks **20** and **21**. The cumulative forces generated by the master limb **12** and the auxiliary limb **14** are transferred through the bow string **19** to the arrow (not shown).

In the present embodiment, a second auxiliary limb **22** is attached to the handle section **11**. The auxiliary limb **22** has a free end **23** positioned adjacent the master limb **13**.

In the present embodiment, the auxiliary limbs **14** and **22** are constructed of a hard resilient material, more specifically a wood laminate. However, other types of hard resilient material including laminates of different materials may be used. For examples, laminated fibrous glass layers, steel layers and certain plastic material layers may be utilized.

Another embodiment of the present invention is shown in FIGS. **4** and **5**. Referring to FIG. **4**, an archery bow **10*a*** has a handle section **11*a*** and a master limb **12*a***. Referring to FIGS. **4** and **5**, an auxiliary limb **25** is removably attached to the bow **12*a***. In the present embodiment, the auxiliary limb **25** is constructed of a resilient steel.

The auxiliary limb **25** has a free end **26** which is positioned adjacent and in force transmitting relationship to the master limb **12*a***. A pair of ears **27** extend outwardly from a lower end **28** of the auxiliary limb **25**. A pair of bolts **29** extend through openings **30** provided in the ears **27** and are positioned on opposite sides of the handle section **11*a*** of the archery bow **10*a***. A strap or plate **31** is positioned over the free ends of the bolts **29** and wing nuts **32** are tightened to hold the entire auxiliary limb assembly in its proper position on the archery bow **10*a***.

It has been found that an auxiliary limb assembly and an archery bow structure according to the present invention gives greater efficiency than was possible in prior art bow structures.

What I claim is:

1. An archery bow comprising, in combination, a handle section, a pair of master limbs extending outwardly from said handle section in opposite directions from a position adjacent the back side of said handle section, a resilient means having one terminal end portion attached to and extending from the terminal end portion of said handle section adjacent the belly side and said resilient means having a cantilevered end portion extending from said handle section to a point adjacent to and at least to or beyond a point adjacent the mid section of one of said master limbs, said resilient means having a length and width sufficient to resist deflection of said master limbs when said master limbs are distorted by a drawing force on a bow string, said resilent means and one of said master limbs being spaced apart at their respective end connections to a terminal end portion of the handle portion,

2. An archery bow, according to claim **1**, wherein said resilient means is attached to the handle section by means of screws.

3. Archery bow, according to claim **1**, wherein the resilient means is attached to the handle section by a means which extends around the handle section.

4. An archery bow, according to claim **3**, wherein said means extending around the handle section comprises threaded bolts, a plate member to receive the threaded ends of said bolts, and wing nuts to threadably receive the ends of the bolts.

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