March 25, 1969

W. R. STEWART

3,434,465

LAMINATED ARCHERY BOW

Filed July 14, 1966

FIG. 1.

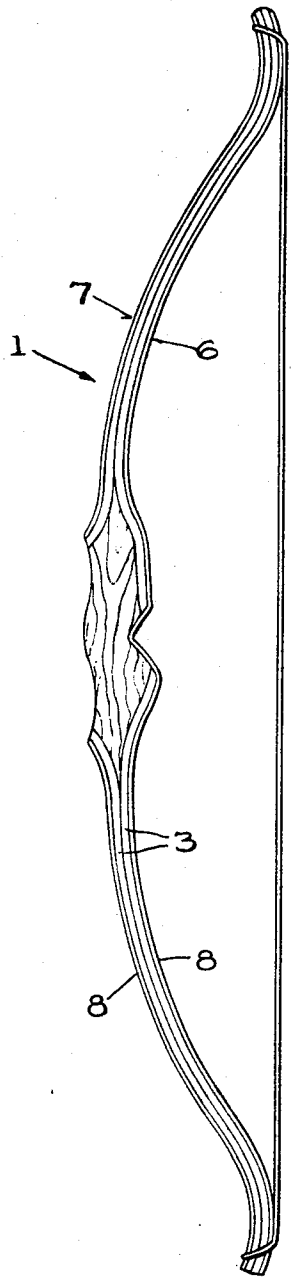


FIG. 2.

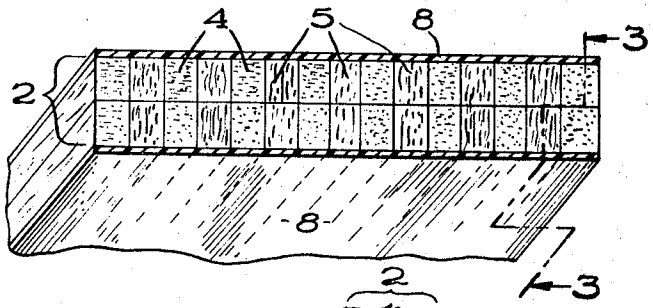
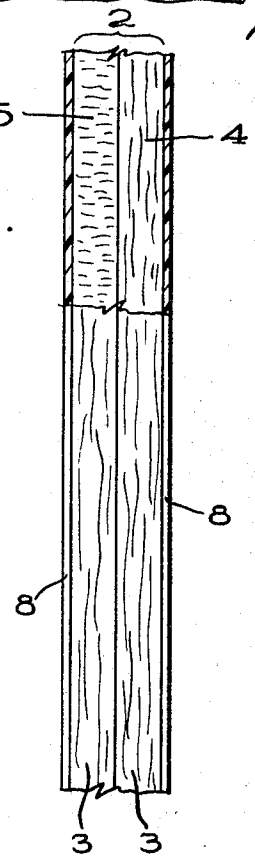


FIG. 3.



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LAMINATED ARCHERY BOW

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Int. Cl. F41b 5/00
U.S. Cl. 124—23 4 Claims

ABSTRACT OF THE DISCLOSURE

An archery bow constructed of a plurality of core layers each including a plurality of longitudinal elements with the grain of alternate elements extending longitudinally of the layers while the grain of the lateral intermediate elements extends normal to the longitudinally extending grain elements.

This invention relates generally to an archery device, and more particularly to an archery bow of an improved composite construction.

Composite or laminated construction has been utilized as the most preferred means for producing archery bows for some time and has been found to be particularly desirable in the manufacture of bows of the recurve type. In Patent No. 2,665,678, issued Jan. 12, 1954, a composite archery bow is disclosed comprising a plurality of laminated elements disposed in a specific manner to achieve what has been considered up until now a very superior bow construction. Quite obviously, this prior construction requires considerable effort and expense to manufacture primarily in view of the arrangement of a multiplicity of elements of varying compositon.

In ths earlier patent a pair of core layers were provided, each having its grain disposed at an angle of 45° to the central longitudinal axis of the bow in an opposed manner such that the grain of the two layers was disposed at right angles to one another.

The present invention relates to a bow construction comprising a core arrangement which has been found to be vastly superior to any bow core presently being used in the manufacture of archery bows and comprises a laminated arrangement of a plurality of wood segments, each having a specific grain structure. An advantage of the present core construction is that it may be utilized throughout the entire length of the bow from the outermost tip of one recurve portion, through the handgrip area, and to the tip of the other recurve portion, together with any suitable build-up in the area of the handgrip portion as desired.

As a result of the proposed type of bow core there is a decided reduction in the degree of twist or offset tiller in the limbs of the bow, particularly in the case of the recurve type. In using the present bow there will be less chance of crystal at the recurves and a reduction in the possibility of laminate shearing or breakage in the core. The archer will find that there will be a smoother draw and subsequent release in the bow which will result in a maximum constant cast to successively propelled arrows.

Accordingly, one of the primary objects of the present invention is to provide an archery bow comprising an improved laminated core construction.

Another object of the present invention is to provide an archery bow comprising a core including a plurality of adjacent longiutdinally extending core elements, the alternate segments of which are disposed with their grain extending at right angles to one another.

A further object of the present invention is to provide an archery bow comprising a core construction including core elements with longitudinally extending grain,

each of said core elements extending from one tip to the other tip of the said bow.

Still another object of the present invention is to provide an archery bow comprising a core construction including a plurality of laminates each of which includes a plurality of adjacent core elements having their grain extending in opposite directions from one another.

With these and other objects in view which will more readily appear as the nature of the invention is better understood, the invention consists in the novel construction, combination and arrangement of parts hereinafter more fully described, illustrated and claimed.

A preferred and practical embodiment of the invention is shown in the accompanying drawing in which:

FIGURE 1 is a side elevation of the present invention.

FIGURE 2 is a sectional perspective view of the core construction of the bow of FIGURE 1.

FIGURE 3 is a composite longitudinal cross sectional and elevational view on the line 3—3 of FIGURE 2.

Similar reference characters designate corresponding parts throughout the several views, of the drawing.

Referring now to the drawing, more particularly FIGURE 1, the present invention will be seen to comprise an archery bow, generally designated **1**, having a core construction which extends from one end to the other end of the bow.

The laminated core, generally designated **2**, includes one and more often two or more core layers **3**, each of which preferably extends the full length of the bow. Wood, the most suitable material for construction of the core layers **3**, is cut, assembled and glued in a specific manner to achieve the advantages of the present invention. As will be seen most clearly in FIGURE 2, each layer **3** extends horizontally the width of the bow and comprises a plurality of laterally adjacent longitudinally extending core segments or elements **4** and **5** of rectangular cross section. Of prime importance is the arrangement of the grain structure of the adjacent elements as shown in FIGURES 2 and 3. Each of the core elements **4** is cut from wood stock so that the grain thereof will extend longitudinally of the element, and thus, longitudinally of the finished bow limb while the intermediate core elements **5** are cut from wood stock such that the grain thereof will extend transversely of the length of these core elements and also perpendicular to the face **6** and back **7** of the completed bow.

In building up the core **2** from a plurality of core layers **3** such as shown in FIGURE 2, the core elements **4** and **5** of each of the layers involved are preferably disposed in mating juxtaposed relationship to maintain congruity in the grain structure of the opposed core elements of the two core layers. This arrangement has been found to produce the ultimate advantages according to the present invention since if core elements **5** of one layer **3** were laminated in opposed relationship to core elements **4** of another layer **3**, it would be obvious that an asymmetrical construction would be produced and would result in the production of uneven stresses during the draw and release of the archery bow.

Any suitable wood adhesive may be utilized to laminate first, the plurality of alternating core elements **4** and **5** together in forming the core layers **3** and secondly, to laminate a plurality of core layers **3** together. Quite obviously, the selected adhesive should be little affected by moisture or changes in humidity and temperature in addition to having maximum adhering effect. After assembly of the laminations of core layers **3**, the other surfaces of the assembled core **2** are covered with plastic material **8**, such as glass fibers impregnated with a synthetic resin.

From the foregoing it will be seen that an improved bow construction is presented comprising a unique core arrangement of a plurality of core elements of alternate

grain structure with the grain of certain elements extending longitudinally and being flexed during bow use and the grain of each alternate intermediate element extending perpendicularly to the bow face and back and being axially compressed during bow use.

I claim:

1. An archery bow comprising, a core body having a face and back and including a plurality of laminated core layers, each of said layers provided with a plurality of elements extending longitudinally of the bow, the grain of each laterally adjacent element in each layer disposed at right angles to one another, the grain of alternate elements in each of said layers extends longitudinally of the core body and the grain of the adjacent intermediate elements in each of said layers extends normal to the face and back of the core body.

2. An archery bow according to claim 1, wherein, said core body includes a lamination of a pair of said layers and the grain of the juxtaposed elements of the pair of layers extend in the same direction.

3. An archery bow according to claim 1, including a plastic impregnated glass fiber layer on the face and back of said core body.

4. An archery bow comprising, a core body extending longitudinally of the bow and having a face and back and including a plurality of laminated core layers, each of said layers extending laterally of said core body and provided with a plurality of laterally adjacent elements extending longitudinally of the body, and the grain of alternate ones of said elements in each of said layers extending longitudinally of said core body while the grain of said elements intermediate and lateral to said alternate elements extends normal to said longitudinally extending grain of said alternate elements.

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W. R. BROWNE, *Assistant Examiner.*

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(5/69)

UNITED STATES PATENT OFFICE
CERTIFICATE OF CORRECTION

Patent No. 3,434,465 Dated March 25, 1969

Inventor(s) William R. Stewart

It is certified that error appears in the above-identified patent and that said Letters Patent are hereby corrected as shown below:

William R. Stewart, Assignor by mesne assignments to Victor Comptometer Corporation, a corporation organized under the laws of the State of Illinois

SIGNED AND
SEALED
MAR 24 1970

(SEAL)
Attest:

Edward M. Fletcher, Jr.
Attesting Officer

WILLIAM E. SCHUYLER, JR.
Commissioner of Patents