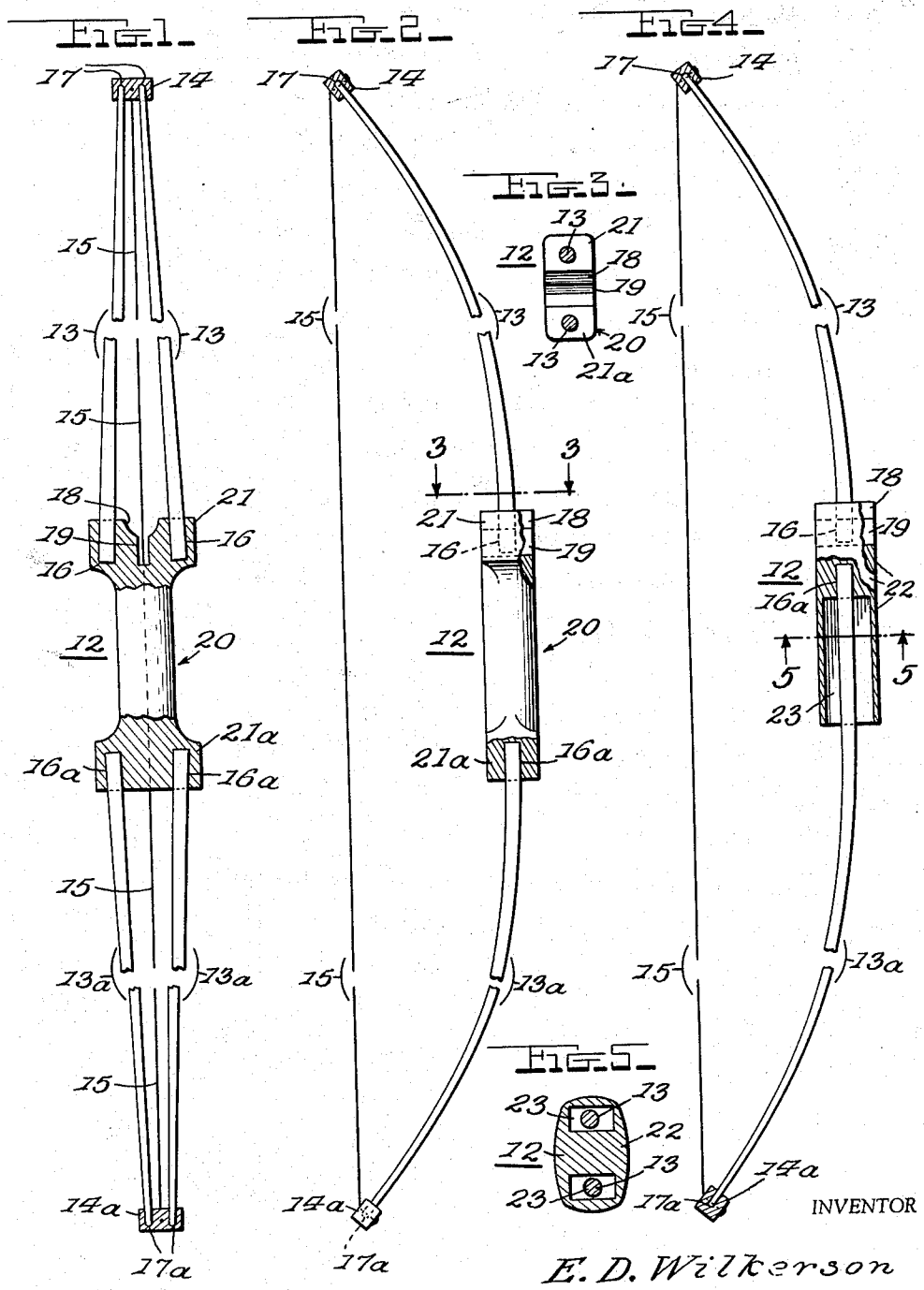
Oct. 25, 1960 E. D. WILKERSON 2,957,469

ARCHERY BOW

Filed Sept. 5, 1956 2 Sheets-Sheet 1



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FIG. 6

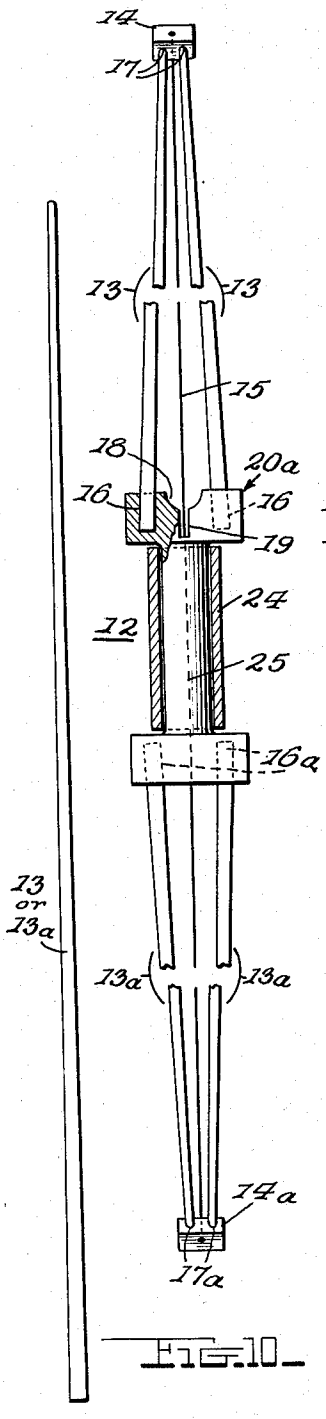


FIG. 7

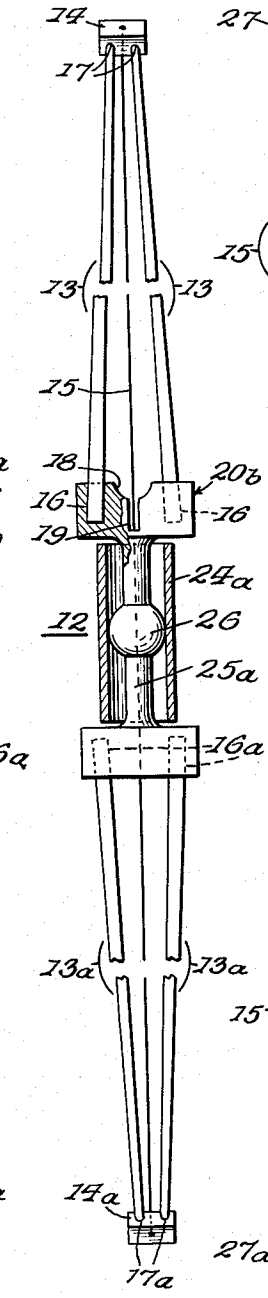


FIG. 8

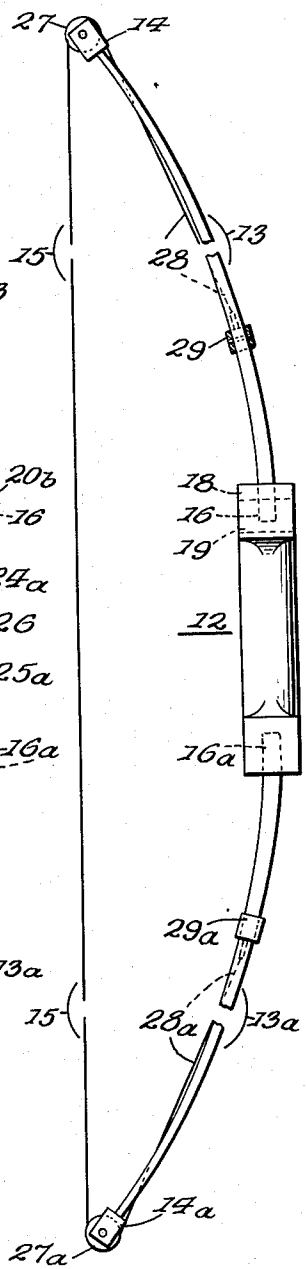


FIG. 9

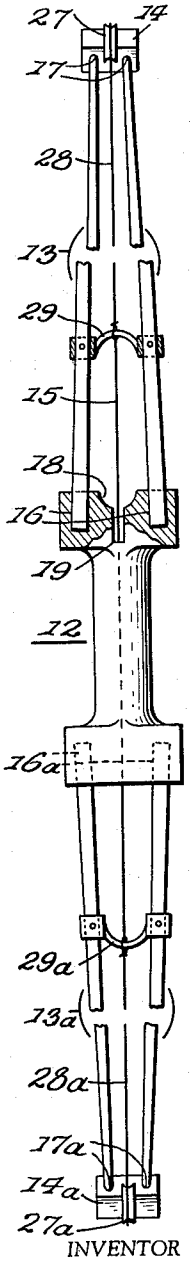


FIG. 10

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ARCHERY BOW

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12 Claims. (Cl. 124—24)

This invention aims to overcome prior deficiencies of archery bows which have had a tendency to deflect the arrow from the intended course when it is released with the bow string. It also aims to provide a novel method of manufacture which dispenses with hand tooling for tapering the upper and lower arms of the bow.

One difficulty with the ordinary bow has been that while the bow string travels in a plane at the exact longitudinal center of the bow, the arrow does not take flight in this plane due to passage at one side of the bow. Consequently, the bow acts not only as a guide for the arrow but acts also as a fulcrum for the arrow as the rear end of the latter is driven straight toward the bow by the bow string, the result being that the front end of the arrow is widely swung from the aforesaid plane. Moreover, the extent of such swinging increases as the bow string nears its straight position, causing the arrow to initially move somewhat obliquely of the intended line of flight before the usual feather or other vane of the arrow eventually straightens the line of flight. This naturally means inaccuracy which can be overcome only with extensive practice.

A second difficulty has been uneven pull on the bow string by the upper and lower arms of the bow. A stronger pull by the lower arm will downwardly tilt the rear end of the arrow; and a stronger pull by the upper arm will upwardly tilt said rear end of the arrow. To overcome such unbalanced pulls it has heretofore been customary to painstakingly taper the arms of the bow with hand tools and make repeated tests to attain equal strength and flexibility of the upper and lower arms. Even then, the bow must be grasped equidistantly between its ends or it will have one long arm and one short arm which will not exert uniform forward pulls on the bow string.

The present invention aims to overcome the difficulties above pointed out by providing a new and improved construction in which the arrow is effectively guided for straight-line flight as it is impelled by the bow string.

Another object is to provide a novel construction in which uniform strength for the upper and lower arms of the bow is easily attainable.

Still another object is to provide a novel construction in which the upper and lower arm of the bow are each formed from two laterally spaced resilient rods of glass fibre and resin bond, steel or other suitable material.

Yet another object is to provide a novel construction in which the resilient rods are connected at their inner ends to a body which has an arrow guide and includes a hand grip.

A further object is to make novel provision for connecting the bow string with the outer ends of the four resilient rods.

A still further object is to so shape the arrow guide that the feather or other vane of the arrow cannot strike it and possibly cause any deflection of the arrow.

Another object is to provide the aforesaid body with a novel hand grip which may turn on a vertical axis

and will thus prevent any tendency of the archer's bow-holding hand to move the bow out of the intended plane as the arrow and bow string are released.

Yet another object is to provide the aforesaid body with a hand grip which may turn on a vertical axis and may tilt to the right, the left, forwardly or rearwardly, thereby counteracting any unintentional hand movement of the bow as the arrow and bow string are released.

Yet another object is to provide a novel construction which permits even an unusually strong and stiff bow to be operated with ease.

A further object is to provide a novel and advantageous construction which may be expeditiously manufactured and profitably sold at a reasonable price.

A still further object is to provide a simplified, less arduous and less expensive method of manufacturing an archery bow and insuring uniform taper of its upper and lower arms.

With the above and other objects in view that will hereinafter appear, the nature of the invention will be more clearly understood by reference to the following detailed description, the appended claims and the several views illustrated in the accompanying drawings.

In the drawings:

Figure 1 is a front elevation partly broken away and in section showing the most simple form of the invention.

Figure 2 is a side elevation of Figure 1, partly broken away and in section.

Figure 3 is a detail horizontal section on line 3—3 of Figure 2.

Figure 4 is a side elevation, partly broken away and in section, showing a second form of the invention.

Figure 5 is a detail horizontal section on line 5—5 of Figure 4.

Figure 6 is a front elevation, partly broken away and in section, showing a third form of the invention.

Figure 7 is a view similar to Figure 6 showing a fourth form of the invention.

Figures 8 and 9 are respectively a side elevation, partly broken away and in section, and a front elevation, partly broken away and in section showing a fifth form of the invention.

Figure 10 is a side elevation of one of the four tapered rods used in each form of construction.

While preferences have been disclosed in the drawings and will be rather specifically described, it is to be understood that variations may well be made within the scope of the invention.

Each form of the invention includes a body **12**, two laterally spaced, upper, tapered, resilient rods **13** connected to and converging upwardly from said body **12**, two lower, laterally spaced, tapered resilient rods **13***a* connected to and converging downwardly from said body **12**, an upper tip member **14** connected to the upper ends of the upper rods **13**, a lower tip member **14***a* connected to the lower ends of the lower rods **13***a*, and a bow string **15** connected to said tip members.

The body **12** has upper and lower sockets **16** and **16***a* removably receiving the inner ends of the upper and lower rods **13** and **13***a*, respectively. The upper and lower tip members **14** and **14***a* also have sockets **17** and **17***a* removably receiving the outer ends of the upper and lower rods **13** and **13***a*, respectively. A construction is thus provided which may be shipped and sold in knocked-down form and easily assembled by the purchaser. This construction also allows easy disassembly for carrying from place to place and equally easy re-assembly for use.

All four rods **13** and **13***a* for each form of construction are of uniform length, diameter and taper and hence have uniform resiliency to exert equal pull on the upper and lower ends of the bow string **15**. These rods may

be easily and rapidly shaped and sized by machine grinding and require no hand tooling. Steel, glass with resin bond or other suitable material may be used.

The body **12** in each form of construction has an arrow-guiding notch **18** in its upper end and located centrally between its sockets **16**. Each body **12** also has a relatively deep and narrow notch **19** which opens upwardly through the bottom of the notch **18**, to clear the usual feather or other vane of an arrow.

In Fiures 1 to 3 a one-piece block **20** constitutes the body **12**. This block is vertically elongated to form a hand grip and is provided with laterally widened upper and lower ends **21** and **21***a* in which the sockets **16** and **16***a* are formed, respectively.

In Figures 4 and 5, a one-piece vertically elongated block **22** forms the body **12** and is upwardly recessed at **23** from its lower end to a plane near the arrow-guiding notch **18**. The lower sockets **16***a* open into the recessing **23** and the lower rods **13***a* extend through this recessing out of contact with the walls thereof. This construction connects the lower rods **13***a* with the block in more close relation with the notch **18** and permits the block **22** to have adequate length to form a convenient hand grip.

In Figure 6, the body **12** is formed from a block **20***a* similar to the block **20** of Figures 1 and 2, and a cylindrical sleeve **24**. This sleeve turnably surrounds the cylindrical portion **25** of the block **20***a*. When using the bow, the sleeve **24** is gripped in one hand and if the archer has an involuntary tendency to move the bow from the intended plane as the bow string and the arrow are released, the sleeve only will turn with the hand.

A very similar construction is shown in Figure 7 but the sleeve **24***a* engages a central spherical enlargement **26** on the portion **25***a* of the block **20***b*. This construction allows the sleeve **24***a* to not only turn but to tilt in any direction if the archer's hand involuntarily twitches during discharge of the arrow, thus preventing such involuntary movements from being imparted to the bow.

In Figures 8 and 9, the upper tip member **14** carries a small sheave **27**, and the lower tip member **14***a* carries a sheave **27***a*. The upper and lower end portions **28** and **28***a* are trained around the sheaves **27** and **27***a* and are anchored to bridges **29** and **29***a* which are suitably secured to the upper and lower rods **13** and **13***a*, respectively. The bridges **29** and **29***a* are near the body **12** where there is relatively little flexing of the rods during use of the bow. This construction so lengthens the archer's pull on the bow string **15** that even an unusually strong and stiff bow may be flexed with ease.

The body **12** of Figures 8 and 9 is shown in the same form as in Figure 1 but it could well correspond structurally to that of any of Figures 4, 6 and 7.

While it is preferred that two spaced rods be employed both above and below the hand grip as described in detail hereinabove, it is to be understood that the novel bow features may be incorporated in a structure wherein two resilient upper rods are employed connected with and converging upwardly from the hand grip bow, in combination with a single resilient lower rod means converging at side portions thereof downwardly from said body.

From the foregoing it will be seen that novel and advantageous provision has been disclosed for attaining the desired ends. However, attention is again invited to the possibility of making variations within the scope of the invention.

I claim:

1. An archery bow comprising a vertically elongated body including a hand grip, said body having an arrow guide in its upper end, two resilient matched upper rods disposed in coplanar relation at opposite sides of a central longitudinal plane through said body and its arrow guide, the lower ends of said upper rods being laterally spaced apart and disposed equidistantly from said central plane and forming an elongated, uninterrupted opening in direct communication with said guide,

said upper rods converging uniformly upward toward said central plane from their lower to their upper ends and terminating on opposite sides of said central plane, two resilient similarly matched lower rods disposed in coplanar relation at opposite sides of said central plane, the upper ends of said lower rods being laterally spaced apart and disposed equidistantly from said central plane, said lower rods converging uniformly downward toward said central plane from their upper to their lower ends and terminating on opposite sides of said central plane, an upper tip member connected with the upper ends of said upper rods, a lower tip member connected with the lower ends of said lower rods, and a bow string stretched between and substantially bisecting said tip members and operable in said central plane, said arrow guide being normal to said central plane to permit free movement of an arrow shaft, feather and nock portion to pass therethrough.

2. A structure as specified in claim 1, said body having four separate elongated sockets individually receiving the inner ends of said rods respectively, said tips also having elongated sockets receiving the outer ends of said rods.

3. A structure as specified in claim 1, in which said arrow guide in the upper end of said body is formed with an upwardly open arrow guiding notch located between said upper rods, and with a relatively narrow notch which opens upwardly through the bottom of said arrow guiding notch to clear the feather or other vane on the arrow.

4. A structure as specified in claim 3 in which said hand grip is of one-piece form.

5. A structure as specified in claim 3, in which said hand grip is a one-piece vertically elongated block form having laterally widened ends.

6. A structure as specified in claim 5; the portion of said block between said laterally widened ends being cylindrical, and a sleeve rotatably surrounding said cylindrical portion to be gripped in one hand.

7. A structure as specified in claim 5; the portion of said block between said laterally widened ends being straight and being provided centrally between its ends with a spherical enlargement, and a cylindrical sleeve rotatably and tiltably surrounding said straight portion and its enlargement and contacting with the latter.

8. A structure as defined in claim 1, in which all of said rods are tapered towards their outer ends, said body having four separate elongated sockets individually receiving the inner ends of said rods respectively, said tip members also having elongated sockets receiving the outer ends of said rods, said arrow guide comprising an upwardly open arrow guiding notch formed in the upper end of said body between said upper rods and a relatively narrow notch which opens upwardly through the bottom of said arrow guiding notch to clear the feather or other vane of the arrow.

9. The structure as specified in claim 8 in which said hand grip is an elongated block form, upwardly recessed from its lower end to a plane near said arrow guiding notch and including therein the two lower vertically elongated sockets disposed above and opening downwardly through said recess, substantially aligned with said upper pair of sockets and receiving the inner ends of the lower tapered rods therein.

10. A structure as specified in claim 1 in which said hand grip is rotatable on an axle extending vertically in the longitudinal central plane of said bow and tiltable angularly in various directions about said axis.

11. A structure as defined in claim 1, together with an upper sheave and a lower sheave carried by said upper tip member and said lower tip member respectively, said sheaves lying in said central plane and said bow string being entrained about said sheaves and being anchored to said upper and lower rods respectively at points near said body, the anchor points of said bow string being

sufficiently distant from said sheaves to allow flexing of said resilient rods between said anchor points and said sheaves.

12. A structure as defined in claim 11 in which the upper and lower rods are connected by upper and lower bridge members respectively, said upper and lower bridge members being located near said body, said upper and lower end portions of said bow string being anchored to said upper and lower bridge members respectively.

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