Aug. 9, 1966 R. T. GAGE 3,265,055

ARCHER'S BOW

Filed March 20, 1964

FIG. 1

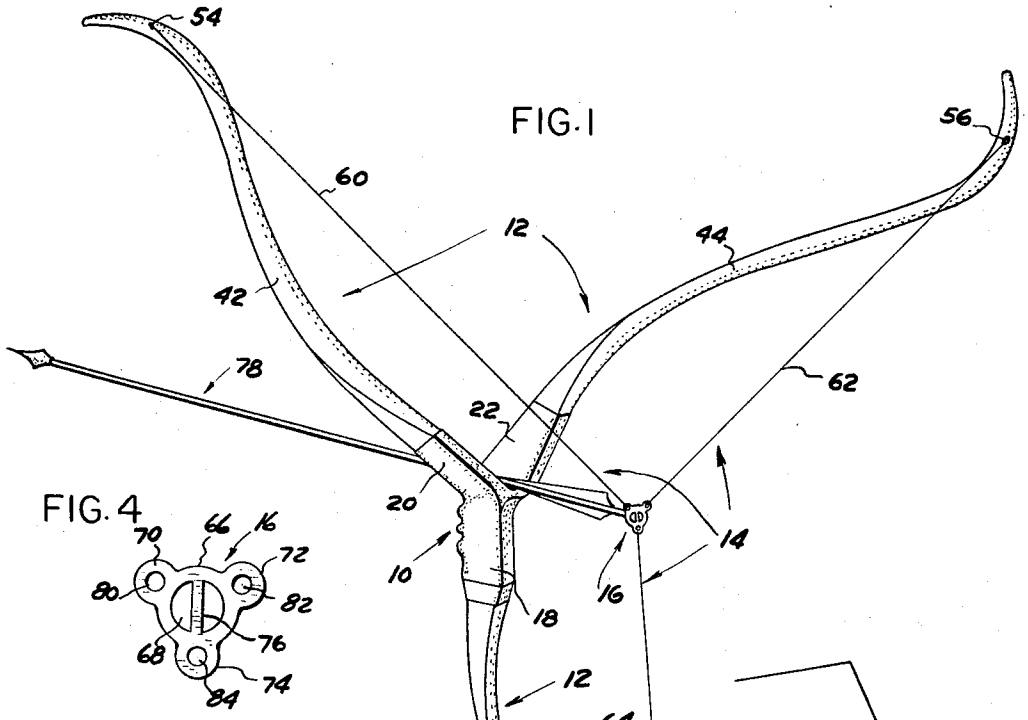


FIG. 4

FIG. 3

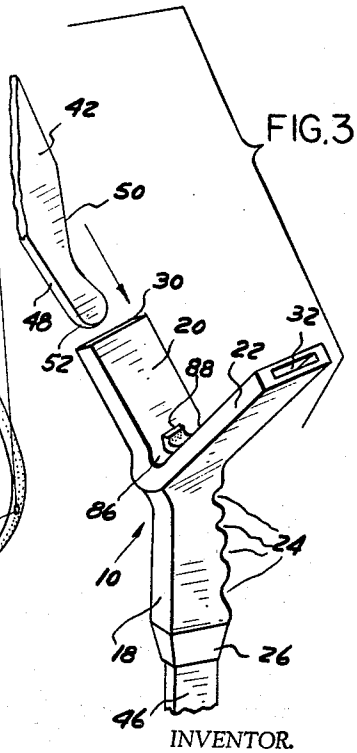
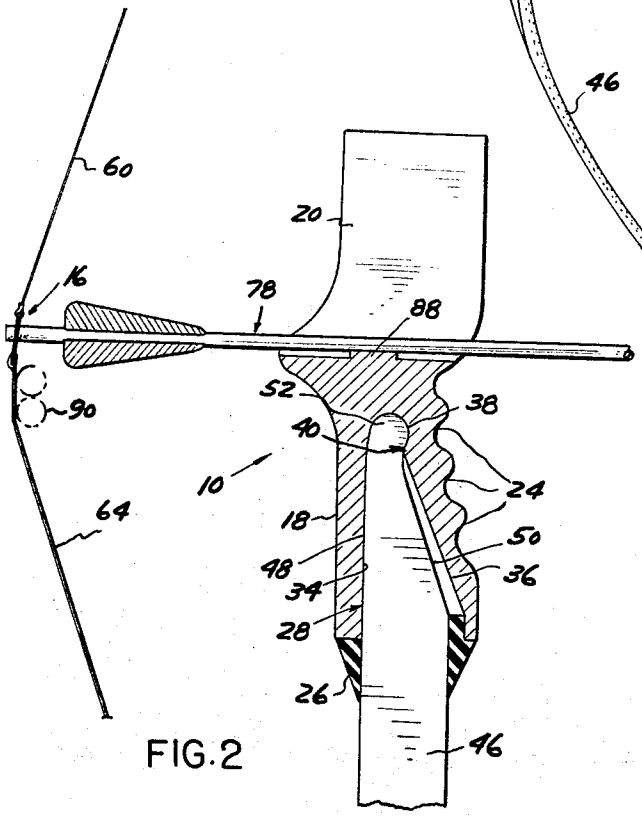


FIG. 2



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ARCHER'S BOW

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This invention relates to archery and more particularly has reference to a novel bow for archers.

The conventional archer's bow comprises a tapered flexible elongated member or rod of wood, metal, or other material, having a chord or string tautly connecting its opposite ends. The entire structure is disposed within a single plane. The arrow propelled by the bow is a linear member having a sharpened forward end and a feathered rearward end adapted to maintain the arrow in flight. The arrow is propelled from the bow by placing it in a position extending perpendicularly to the length of the bow adjacent a handle portion provided at the center of the bow rod. In this position, the arrow is disposed substantially in the same plane as the bow. The rearward end of the arrow is transversely slotted or nocked to receive the adjacent bow string. One of the archer's hands is placed about the handle. The rearward end of the arrow is grasped between the fingers of the archer's other hand, and pulled rearwardly until sufficient tension is created in the string. The rearward end of the arrow is then released, thereby permitting the taut chord to propel the arrow forward through the air to its target.

As a result of the construction, even a minimal degree of accuracy or proficiency with the bow requires substantial practice and experience. Thus, although even a novice is capable of a certain degree of accuracy with other weapons, such as firearms, the beginner or inexperienced archer is almost incapable of achieving any accuracy at all with the bow. The problem of propelling an arrow forward with any force at all from the bow is an extremely difficult, and at times a seemingly insurmountable one for the novice.

There are a number of reasons for these problems. First, the novice experiences great difficulty in grasping and supporting the arrow. Considerable skill is required to support the forward portion of the arrow on his hand while clasping that hand tightly about the handle of the bow. The hand does not provide a suitable support for the arrow unless it is held at just the right angle with respect to the bow; when the upper portion of the hand is angled too much, the arrow will be propelled sideways off of the bow rather than forwardly, thereby ruining the archer's shot. Similarly, the novice finds it difficult to properly encircle the bowstring and the end of the arrow with his fingers.

Another problem encountered by the inexperienced archer is that caused by the difficulty in properly placing the arrow with respect to the length of the bow. The arrow is frequently placed too high or too low adjacent the bow handle section; in addition, the novice archer often fails to align the arrow perpendicularly to the length of the bow with a resulting poorly-aimed shot.

It can be seen that many of the problems caused by the conventional bow result from the orientation of this bow and its arrow in a single plane. Consequently, the arrow is supported and guided only slightly by the construction of the bow; the archer must rely principally upon his own skill in grasping the bow and the arrow to attain even the minimal degree of accuracy.

With these and other problems in mind, it is the principal object of the present invention to provide an improved archer's bow which reduces the skill required to properly aim and loose an arrow at a target.

In a preferred embodiment of the invention which will be subsequently described in greater detail, the bow comprises three arms projecting radially outwardly from a central hub, the angle between each pair of adjacent arms being 120 degrees. A section of conventional bow-string extends between the end of each arm and a central nocking plate or guide. The latter member includes a central opening having a vertical dividing strip adapted to receive the arrow's nocked end. The nocked plate is positioned in horizontal alignment with the bottom of the V-shaped opening formed by two upwardly extending arms when the third arm projects vertically downwards. The arrow is nocked in the plate with its forward end cradled in the V-shaped opening. The lower arm is provided with a suitable hand grip which is grasped by the archer. The arrow is drawn and loosed by pulling one segment of string rearwardly, thereby twisting the nocking plate **16** and causing it to clamp on the end of the arrow.

The V-shaped cradle or fork formed by the upwardly and outwardly projecting arms thus provides a guide for the arrow. The nocking plate and cradle make it impossible to align the arrow improperly with respect to the bow. The archer grasps the bowstring rather than the rear end of the arrow. As a result, even the novice archer can attain some proficiency with the bow in a very short time. Moreover, the present bow permits greater consistency of accuracy than has heretofore been the case. This permits faster self-improvement than was possible with a conventional bow where a far greater number of variables had to be considered.

It is readily appreciated that one of the major problems that will be associated with a novel bow of the type now suggested is that of its bulkiness. Whereas the conventional bow is disposed entirely in a single plane, the present bow projects outwardly in three directions and consequently is not easily stored or transported from place to place.

The present invention therefore contemplates that the present bow be constructed of a central hub having radially projecting sockets set 120 degrees apart, and three insertable arms adapted to lock in the sockets so as to form a three-pronged bow of the type described above. A collapsible conventional bow could be provided using the same principle of a central hub and insertable arms.

It can be seen that the present invention provides a novel and useful construction for the archery bow. It increases the accuracy of the most proficient and experienced archer and, at the same time, makes archery far more enjoyable for the novice.

The present bow may be constructed of the same materials employed in conventional bows and will not greatly increase the cost of the bow. Moreover, by constructing the bow of detachable parts as described above, substantial flexibility is obtained, permitting the archer to replace the individual arms if necessary. In addition, the same hub may be employed with arms of different length and strength when the bow is to be employed for different purposes.

Other objects and advantages of the present invention will be more readily apparent from the following detailed description of a preferred embodiment thereof. The description makes reference to the drawings, in which:

FIGURE 1 is a perspective view of a preferred embodiment of the present invention with the arrow in position;

FIGURE 2 is a detail cross-sectional view taken vertically through the hub of FIGURE 1 and showing the arrow and bow in drawn position;

FIGURE 3 is a detail exploded perspective view of the hub of FIGURE 1 and a portion of one of the upper arms; and

FIGURE 4 is a plan view of the nocking plate shown in the embodiment of FIGURE 1.

Referring to the drawings in detail, FIGURE 1 shows a preferred embodiment of the present invention as gen-

erally comprising a central hub **10**, outwardly projecting arms **12**, a plurality of string segments **14**, and a nocking plate **16** at the junction of the string segments.

As shown in detail in FIGURES 2 and 3, the central hub **10** comprises a vertical downwardly extending handle section **18**, and two outwardly and upwardly extending arm supports **20** and **22**. The three sections **18**, **20** and **22** are set at 120 degrees with respect to one another. The handle section **18** includes a finger grip contoured surface **24**, a bevelled lower end **26**, and includes an axially extending slot **28** extending from the bevelled section **26** to a point adjacent the central part of the hub **10**. The upwardly projecting arm supports **20** and **22** similarly include slots **30** and **32** extending from their outer ends toward the central portion of the hub **10**. The entire hub **10** may be constructed of wood, plastic, or any other suitably rigid material, while the bevelled section is constructed of rubber or other resilient material.

Each of the slots **28**, **30**, and **32** are formed as shown in FIGURE 2. These slots are wide at their outer end and narrow as they extend inwardly. They include an axially extending wall **34**, and a diagonally extending wall **36**. The walls **34** and **36** meet at their inner ends along a curved wall **38**. A small shoulder **40** is formed between the diagonally extending wall **36** and beginning of the curved wall section **38**. As can be seen in FIGURE 2, the diagonally extending wall **36** begins interiorally of the bevelled section **26** in the handle section **18**. In the remaining arm supports **20** and **22**, the diagonally extending wall begins immediately at the outer end of the arm support.

Each arm **12** comprises a flexible elongated tapered rod **42**, **44**, and **46**. The inner or base end of each rod is formed in the manner shown in FIGURES 2 and 3 and includes a linear section **48**, a diagonally extending side **50**, and a rounded end portion **52** having the same general configuration as the curved wall **38** in the hub **10**. The outer end of each rod **42**, **44**, and **46** is curved forwardly as shown in FIGURE 1 and includes a transverse slot **54**, **56**, and **58** extending therethrough.

Each of the arms **12** is adapted to fit in a corresponding slot in one of the sections **18**, **20** and **22** of the hub **10**. The rod is placed in its slot by sliding it inwardly with its diagonally extending side **50** contacting the diagonally extending wall **36** along the interior of the slot. The rod is moved inwardly in this manner until the rounded end portion **52** is disposed within the curved wall **38**. The rod is then moved laterally until the linear section **48** contacts the axially extending wall **34**. In this position, the shoulder **40** prevents the rod from being removed in the axial direction. When the lower rod **46** is placed in the handle section **18** in this manner, the resilient bevelled section **26** is compressed as the rod is moved along the diagonally extending side **36**.

When the rods **42**, **44**, and **46** are mounted in the hub **10**, as described above, they will extend outwardly set apart at 120° with respect to one another. The bow string **14** comprises three string segments **60**, **62** and **64** each of which is mounted in one of the slots **54**, **56**, and **58** of the corresponding rods **42**, **44**, and **46** and extends radially inward where it is fixed to one corner of the nocking plate **16**.

As shown in FIGURE 4, the nocking plate **16** comprises a cylindrical body **66** having a central hole **68**, and three outwardly projecting ears or ends, **70**, **72**, and **74**. A small strip **76** bisects the central hole **68** and extends in the same direction as the ear or end **74**. The strip **76** is of the proper size to receive the slotted end or nock of a conventional arrow shown at **78** in FIGURES 1 and 2. Each ear **70**, **72**, and **74** includes a small hole **80**, **82**, and **84**. The end of each string segment **60**, **62** and **64** is fixed in the corresponding hole **80**, **82**, and **84**. The segments of the bow string **14** are of such size that when they are mounted in the slots in the arms and the holes in the nocking plate, they are substantially taut. The lower string segment **64** is slightly longer than the upper two segments **60** and **62**. Alternatively, it might be of the same length. The nocking plate **16** is situated in horizontal alignment with a small notched section **86**, shown in FIGURE 3, formed on the upper surface of the two arm supports **20** and **22** at their juncture and having a small projecting arrow support **88** midway along its length. It can be seen, that a V-shaped cradle or rest is formed between these two arm supports **20** and **22** at their juncture, and the notched section **86** is formed at the lower portion of this V-shaped cradle.

Thus, when the arrow **78** is placed horizontally along the arrow support **88** in the notched section **86** of the hub **10**, the nock or slotted end of the arrow **78** will abut the center of the nocking plate **16**.

In using the present bow, an arrow **78** is placed in the notched section **86** of the hub **10** and rotated until the slotted end or nock of the arrow is vertically oriented and fits about the strip **76**. The handle **18** is grasped with one hand (usually the left hand), the fingers extending about the contoured surface **24**. The first two or three fingers **90** of the other hand (usually the right hand) are placed on the lower string segment **64** directly below the nocking plate **16**. As the string segment **64** is pulled rearwardly, in the manner shown in FIGURE 2, the nocking plate **16** twists slightly in the vertical plane of the string segment **64** and arrow **78**. This has the effect of clamping the rear end of the arrow **78** in the nocking plate **16** and thereby preventing the arrow from slipping out of the nocking plate as the bow is fully drawn. Thus, the archer is not required to grasp the arrow while sighting or shooting the bow.

It can be seen that the cradle formed by the arrow support **88** in the notched section **86** and the V-shaped upper surface of the arm supports **20** and **22**, function in the same manner as would the upper surface of the hand holding a conventional bow. However, this V-shaped cradle makes it far easier to properly support the arrow than is possible when only the upper surface of one hand is employed. In addition, it is impossible to improperly align the arrow **78** with respect to the bow since the arrow must necessarily extend from the nocking plate **16** to the cradle formed in the hub **10**.

The present bow may be disassembled at any time by simply removing the bow string **14** and the nocking plate **16** and pulling each arm **42**, **44**, and **46** out of its corresponding slot **28**, **30**, and **32**. The individual rods are removed from the hub **10** by orienting them with the diagonally extending side **50** abutting the diagonally extending wall **36** and pulling the rod outwardly.

When the present bow is assembled, the tension in the bow string **14** will hold the individual rods **42**, **44**, and **46** in place in the hub **10**. This will aid the shoulder **40** in the slot **28** in holding the entire bow structure rigidly together. It is understood that any type of suitable locking means may be employed to hold the individual rods in the hub. If desired, the rods may be retained in the hub merely by the tension in the bow string.

It can be seen that conventional bows may also be constructed in this manner with a central hub and removable arms or rods. Similarly, any type of suitable locking means may be employed to hold the rods in place. It is also contemplated that a bow may be provided having more than three arms. In such a case, one of the rods will be provided with a suitable hand grip for supporting the bow, and two of the upwardly extending arms will form a suitable cradle or rest for the arrow. The nocking plate will, of course, be aligned with this cradle.

It will be apparent to those skilled in the art to which this invention pertains, that various changes or modifications in the construction of the component parts may be

made without departing from the spirit of the invention, or from the scope of the appended claims.

Having thus described my invention, I claim:

1. An archer's bow, comprising:
(a) a central hub;
(b) at least three elongated resilient arms projecting outwardly from said hub;
(c) and string segments extending between the ends of said arms and a point substantially aligned with the outer surface of said hub.

2. An archer's bow, comprising:
(a) a central hub;
(b) at least three elongated resilient arms projecting outwardly from said hub, at least one of said arms projecting substantially downwardly therefrom, and at least two of said arms projecting upwardly to form an arrow support therebetween;
(c) and string segments extending between the ends of said arms and a point substantially aligned with said arrow support.

3. The structure set forth in claim 2, wherein said downwardly projecting arm comprises a handle section adapted to be gripped by the archer.

4. An archer's bow, comprising:
(a) a central hub;
(b) at least three elongated resilient arms projecting radially outwardly from said hub, at least one of said arms projecting substantially downwardly therefrom, and at least two of said arms projecting upwardly to form a V-shaped arrow support therebetween;
(c) and string segments extending between the ends of said arms and a point substantially aligned with said arrow support.

5. An archer's bow, comprising:
(a) a central hub;
(b) at least three elongated resilient arms projecting outwardly from said hub;
(c) a nocking plate substantially aligned with an opening in said hub and adapted to receive the nocked end of an arrow;
(d) and string segments extending between the ends of said arms and said nocking plate.

6. An archer's bow, comprising:
(a) a central hub;
(b) three elongated resilient arms projecting radially outwardly from said hub, one of said arms projecting downwardly therefrom, and two of said arms projecting upwardly to form a V-shaped arrow support therebetween;
(c) a nocking plate aligned with said arrow support and adapted to receive the nocked end of an arrow;
(d) and a string segment extending between the end of each arm and said nocking plate.

7. The structure set forth in claim 6 wherein said nocking plate includes three radially projecting ears adapted to connect to said line segments.

8. An archer's bow, comprising:
(a) a central hub;
(b) at least a unit of three elongated resilient arms detachably mountable in said hub to project outwardly therefrom;
(c) and string segments extending between the ends of at least 3 of said arms and a point substantially aligned with a point adjacent the upper surface of said hub.

9. An archer's bow, comprising:
(a) a central hub having at least three arm-receiving slots therein;
(b) at least three elongated resilient arms removably insertable in said slots to project outwardly from said hub, at least one of said arms projecting substantially downwardly therefrom and at least two of said arms projecting upwardly to form an arrow support therebetween;
(c) and string segments extending between the ends of said arms and a point substantially aligned with said arrow support.

10. An archer's bow, comprising:
(a) a central hub;
(b) at least a unit of three elongated resilient arms detachably mountable on said hub and adapted to project outwardly therefrom, at least one of said arms projecting substantially downwardly therefrom, and at least two of said arms projecting upwardly to form an arrow support therebetween;
(c) a nocking plate disposed in alignment with said arrow support and adapted to accommodate the nocked end of an arrow;
(d) and string segments extending between the ends of said arms and said nocking plate.

11. An archer's bow, comprising:
(a) a central hub having three arm-receiving slots therein;
(b) three elongated resilient arms removably insertable in said slots to project radially outwardly from said hub, one of said arms projecting downwardly therefrom, and two of said arms projecting upwardly, said upwardly projecting arms and the upper portion of said hub forming a V-shaped arrow support;
(c) a nocking plate disposed in alignment with said arrow support and adapted to accommodate the nocked end of an arrow;
(d) and a string segment extending between the end of each arm and said nocking plate.

12. The structure set forth in claim 11 and wherein said nocking plate comprises a body, a central opening in said body, a strip extending across said opening and adapted to fit in the nocked end of an arrow, and radially outwardly extending ears on said body adapted to be fixed to the end of said string segments.

13. The structure set forth in claim 11 wherein said hub includes a handle portion along the lower end thereof.

14. An archer's bow, comprising:
(a) a central hub having three radially outwardly extending slotted sections, one of said sections extending downwardly therefrom, the other of said sections projecting upwardly therefrom to form a V-shaped arrow support;
(b) three arms removably insertable in said slotted sections;
(c) a nocking plate means disposed in said alignment with said arrow support and adapted to accommodate the nocked end of an arrow;
(d) and a string segment extending from the end of each arm to said nocking plate.

15. The structure set forth in claim 14 and wherein said slotted sections of said hub project outwardly at an angle of 120° with respect to one another.

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