# United States Patent

**Diamond, Sr.**

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## [54] ADJUSTABLE ARCHERY SIGHT


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[21] Appl. No.: **81,817**

[52] **U.S. Cl.** ..... **124/30 R,** 124/24, 33/46 A

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

[58] **Field of Search** ..... 124/30 R, 23, 24, 22, 25, 35; 33/46 A, 1 M



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[57] **ABSTRACT**

Sighting mechanism is provided that enables an archer to make a variable sight adjustment while holding the bow in one hand and gripping an arrow as tensioned by the bow string with the other hand. The sighting mechanism has a vertically movable sighting member mounted on the belly of a bow and a reel or drum mounted on the back of a bow. Connected between the sighting member and the reel are two filaments. One filament operates on the sighting member to move it upwardly when the reel or drum is rotated in one direction, and the other filament operates on the sight member to move it downwardly when the reel is rotated in the opposite direction.


**9 Claims, 11 Drawing Figures**

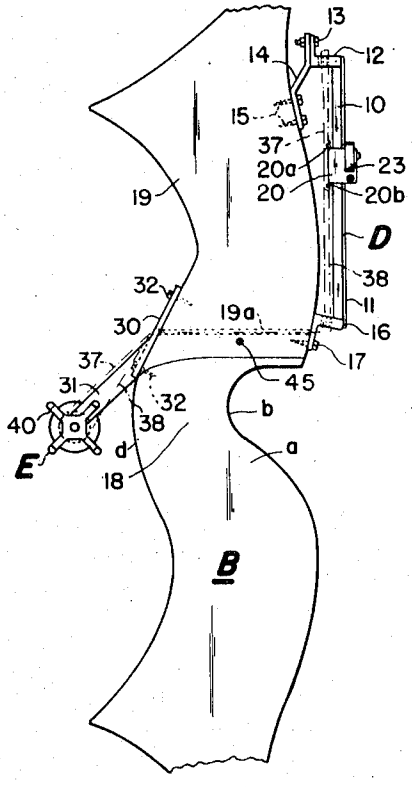
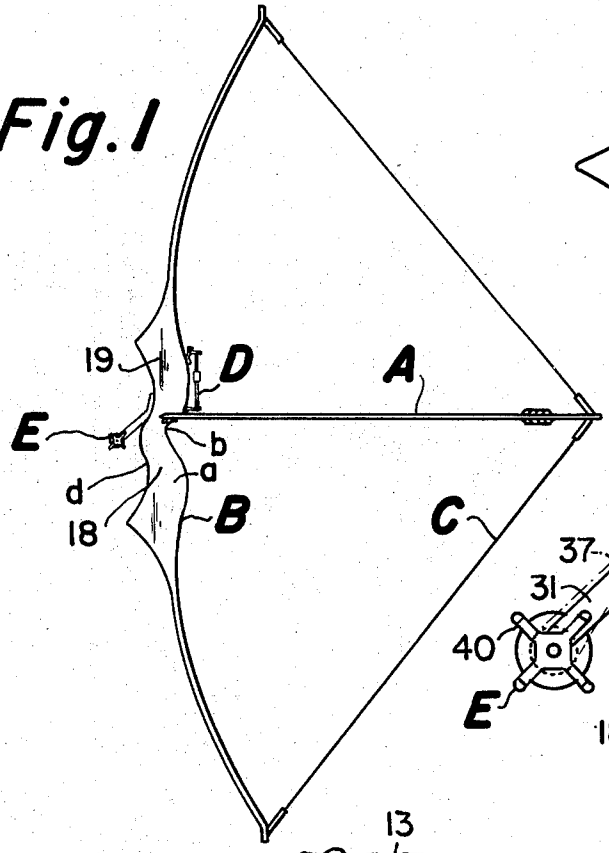


Fig. 1



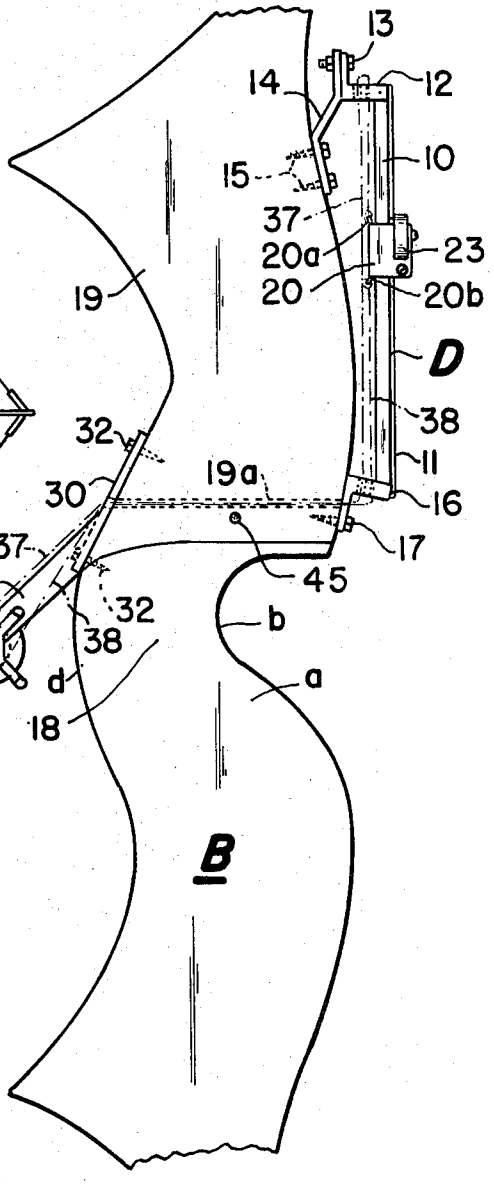




Fig. 2

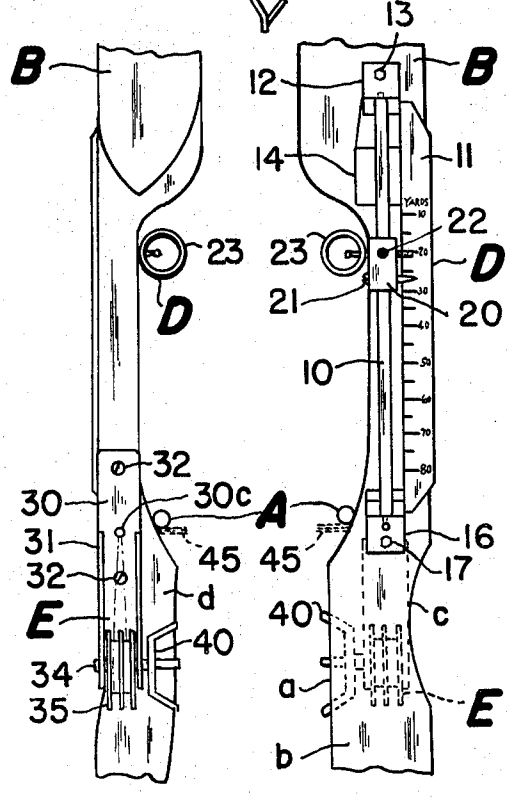



Fig. 4




Fig. 3

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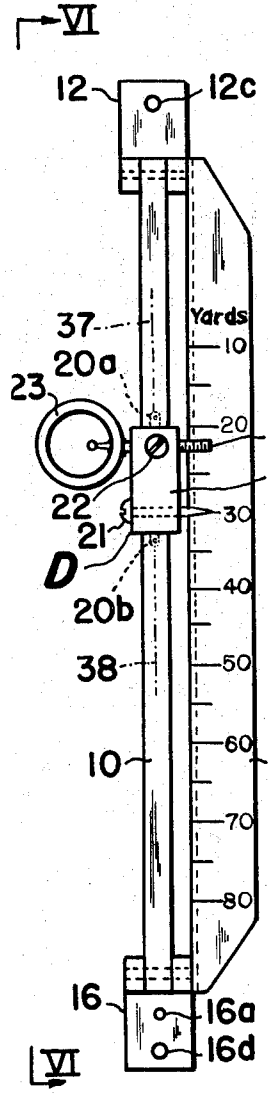


Fig. 5

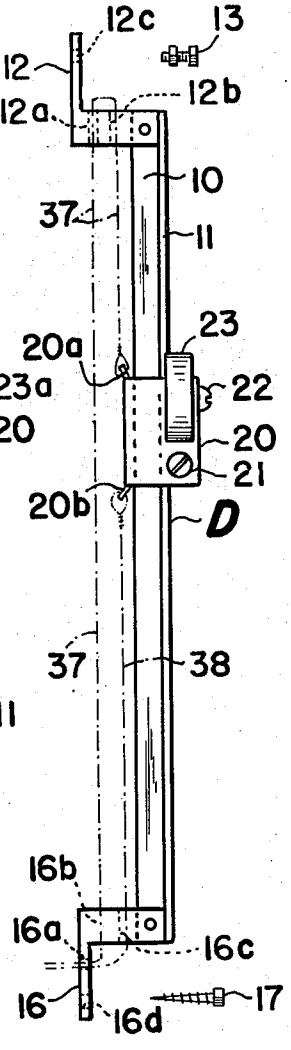


Fig. 6

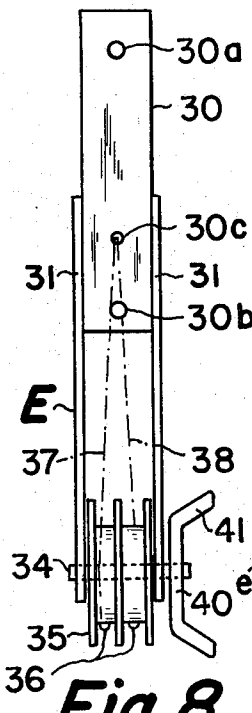


Fig. 8

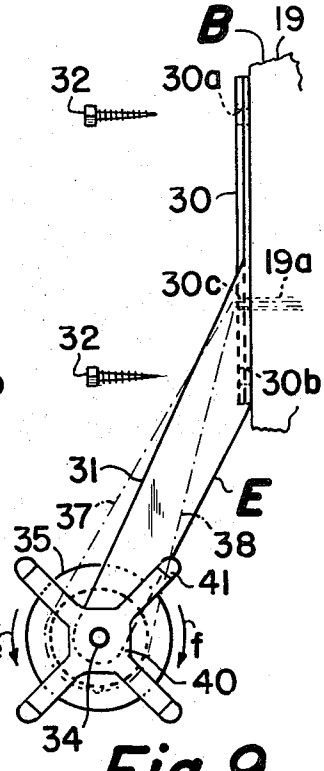


Fig. 9

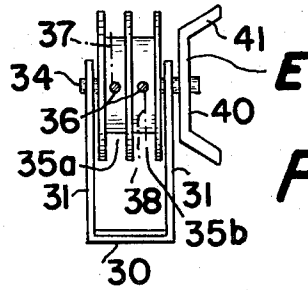


Fig. 10

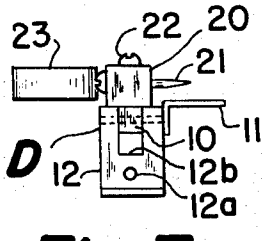


Fig. 7

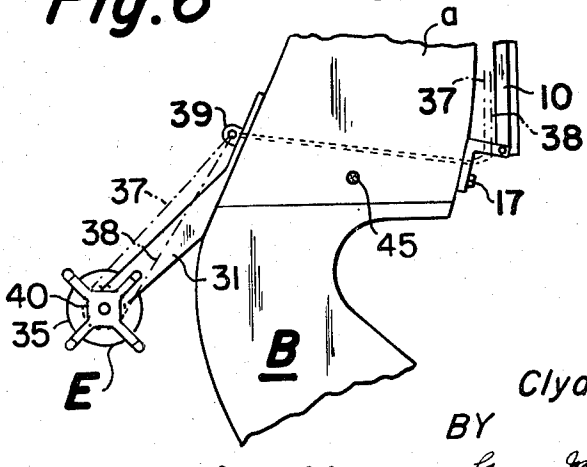


Fig. 11

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# ADJUSTABLE ARCHERY SIGHT

## BACKGROUND OF THE INVENTION

1. Field of the Invention

This invention relates to a finger-operative sighting device for mounting on an archery bow and particularly, to an improved device for accurately sighting an arrow during movement of a target.

2. Description of the Prior Art

The archer-hunter has always encountered the problem of properly sighting an arrow in attempting to shoot a moving target, such as deer or other wild game. In this connection, ordinary sights, such as used for target shooting, have not been practical in that if the game is moving, it is difficult, if not impossible, to keep the sight set properly to keep the arrow accurately aligned with the game for release at the appropriate time. Some archers use a stationary sight and then pick out a certain pin or mark to correspond with the yardage that is to be shot. An adjustable sight has been illustrated in my U.S. Pat. No. 3,450,122 which uses electric signaling means to automatically indicate when the tip of the arrow has reached a proper shooting position. It will be noted that utilization of a slide such as disclosed in this patent requires either the more or less free use of the right or left hand and thus, a release of the arrow from its shooting position. In accordance with the present invention, however, both hands may be in customarily required positions at which an arrow is "ready" for shooting.

## SUMMARY OF THE INVENTION

In order to meet the above problem, I have devised a finger actuated device which is constructed and positioned forwardly of the bow, adjacent a natural, gripping position of the left hand (assuming the use of the equipment by a right-handed person). The construction enables the index or first finger of the left or bow-gripping hand to be used to continually or to, as desired, effect a movement of a vertically slidable sight-carrying element to quickly adjust the sight position to accommodate it to an instant position of the target at a particular moment. This is done without any need for the archer to release his left hand from a tight gripping position about the bow or his right hand from a fully backward drawn "ready" position of the arrow. The construction is such that no noise is involved that may spook the game. The construction of the mechanism enables the archer to assume his natural shooting position or customary hand gripping relationships and to adjust the sight without adversely changing proper shooting gripping positions of principal digits of the hands.

## BRIEF DESCRIPTION OF THE DRAWINGS

FIG. **1** is a side view in elevation showing a bow string as drawn back by an arrow to a typical shooting position.

FIG. **2** is an enlarged side fragment in elevation through a central body portion of a bow incorporating the mechanism of the invention; it will noted that this view is taken along a wide side or face of the bow.

FIG. **3** is a fragmental narrow face view in elevation on the scale of FIG. **2**, further illustrating the construction and positioning of mechanism of the invention.

FIG. **4** is an elevational fragment on the scale of FIGS. **2** and **3**, taken from the back of the bow and further illustrating the mechanism of FIG. **3**.

FIG. **5** is an elevation on a further enlarged scale showing details of the construction of a sighting means that may be utilized in accordance with the invention; as shown in FIG. **3**, the sight is mounted on the belly of the bow above a forwardly necked hand-gripping portion of the bow.

FIG. **6** is a side view in elevation on the scale of and taken at right angles to FIG. **5**, along line VI—VI thereof.

FIG. **7** is a top plan view on the scale of and of the sighting means of FIG. **5**.

FIG. **8** is a front view in elevation of an operational control part or unit of the mechanism of the invention; this part, as illustrated particularly in FIGS. **1** and **2**, is adapted to be mounted on the back of a bow adjacent to and above a handgrip portion.



FIG. **9** is a side view in elevation on the scale of and of the part or unit of FIG. **8**; FIG. **10** is a top plan view thereof on the same scale as FIGS. **8** and **9**.

And, FIG. **11** is a fragmental side view in elevation on the scale of FIG. **2**, illustrating a modified utilization of the mechanism wherein control strands or threads are carried along the outside of the bow rather than as shown in FIGS. **2** and **9**, through a bore hole extending from its front to its back face.

## DESCRIPTION OF THE PREFERRED EMBODIMENT

Referring to FIG. **1** of the drawings, an archery set consisting of an arrow A, a flexible bow B and a bow string C are illustrated in a so-called drawn or "ready" shooting position. In this position, assuming a right-handed person, the left hand of the archer will be gripped around a forwardly necked-in central portion **18** of the bow B, with the thumb extending across a narrow face *b* and along far wide side face *c*, and the fingers extending along near wide side face *a*, about and across face *d* to meet the thumb along the side face *c*. It has been determined that the remaining three fingers and the thumb of the gripping hand will provide a full gripping retention of the bow B in its expanded relation, if the index or first finger is released to fit within spokes of a control, operating device or part E of the invention. As shown particularly in FIGS. **2**, **9** and **11**, control device or part E is adapted to move a sighting device or part D vertically along the narrow face *b* of the bow B. At this time, of course, the right arm will be drawn back and the right hand will be gripping the nocked end of the arrow A adjacent the apex of the draw string C. It is thus believed to be apparent that the archer or hunter may retain his equipment in the fully drawn "ready" position of FIG. **1** and, at the same time, quickly and easily adjust the sighting device D to the actual momentary position of the game or target.

For the purpose of illustrating the invention, a somewhat typical sighting device D has been illustrated. It has a vertically extending slide-receiving rod or guide bar of rectangular section **10** mounted at its ends on top and bottom positioning brackets **12** and **16**. The top bracket **12**, as shown in FIG. **2**, is of angular shape and is secured, as by a nut and bolt assembly **13**, to a second, dog-leg type of direct mounting bracket **14** (see FIG. **2**). As shown in FIGS. **2** and **6**, the assembly **13** extends through a hole **12***c* in the bracket **12** and a similar hole in the bracket **14**. The bracket **14** is shaped to be securely mounted on the narrow face of belly of the bow B by suitable means such as wood screws **15**. The bottom bracket **16** at the other end of the slide or guide bar **10** is also of angular shape and is directly mounted on the belly by wood screws **17** (see also FIG. **6**). This provides a rigid mounting for the sighting part or device D at which the slide bar **10** is retained in a substantially fully vertical position.

Slider block or element **20** has a rectangular bore therethrough for mounting it on the bar **10** in an easily slidable, but frictional, position-retaining relation with respect thereto. The slider **20**, carries an upper eyelet lug or tab **20***a* that is adapted to be connected to one end of a control or operating filament, thin wire, thread, strand or string **37**, and has a bottom eyelet or tab **20***b* that is adapted to be connected to a second control or operating filament, thin wire, thread, strand or string **38** for moving it vertically along the bar **10**, as actuated by the sighting control device E. The slide **20**, as shown particularly in FIGS. **3** and **5**, may have any suitable type of sighting device, such as a peep sight **23**, carried thereby. The unit or device D also has a side-positioned calibrated scale **11**, and the slider **20** has a through-extending alignment pin **21** that is adapted to align with the graduations on a vertical scale **11**, see particularly FIGS. **5** and **7**. The sight **23** is shown carried on a threaded stem **23***a* in order that it may be adjusted transversely, horizontally as to its positioning on the slider **20**. Set screw **22** is employed to lock it in a desired setting.

The sighting control device E, as shown particularly in FIGS. 2, 3, 4 and 8 to 11, has a base mounting plate part or member 30 that is adapted to rest upon and to be secured to the back of the bow. In the embodiment shown in FIGS. 3, 4 and 8, the base plate member 30 has a pair of holes 30*a* and 30*b* therethrough for receiving mounting wood screws 32 (see FIG. 4) and a central hole opening or eyelet 30*c* therethrough for bypassing the operating filaments 37 and 38. A pair of fingers define a backwardly downwardly outwardly inclined, bifurcated, supporting bracket 31 that extends integrally from the base plate member 30 and, at its outer end, rotatably or pivotally carries a pin shaft 34 which extends therethrough and on which a two-part, index finger operated pulley 35 is securely mounted for rotation therewith.

As shown in FIG. 10, the pulley 35 has a pair of adjacent compartments 35*a* and 35*b* to respectively receive ends of the two operating filaments 37 and 38 which may be secured within the respective compartments by set screws 36.

One of the filaments 37 may operate from or over the top of its pulley compartment 35*a*, while the other filament 38 may operate from the underside of its compartment 35*b* (see the dot and dash lines). As shown, the upper filament 37 extends backwardly along with the lower filament 38, either through a bore hole 19*a* in stock part 19 of the bow B (see FIGS. 2 and 9) or through an eyelet 39 (see FIG. 11) and along near side *a* of the bow; the filaments are connected at their other ends by closed loops respectively to the upper and lower eyelet lugs 20*a* and 20*b* of the slider 20. The filament 37 is looped through adjacent holes 12*a* and 12*b* in the bracket 12 and is connected at its inner end to the lug 20*a*. Thus, if the spool 35 is rotated counterclockwise (see the arrow *e* of FIG. 9), this will cause the upper filament 37 to wrap around the spool 35 and pull the slider 20 upwardly and will cause the lower filament 38 to run-off or play-out from the spool 35 by the same amount. If the rotation is reversed to a clockwise rotation as indicated by the arrow *f*, then the bottom filament 38 will tend to pull the slider 20 downwardly and wrap it on the spool 35, while the upper filament 37 will run-off the spool 35 or play-out by the same amount.

It will be noted (see FIG. 6) that both filaments 37 and 38 extend through a horizontal eyelet or opening 16*a*, that filament 37 extends through adjacent vertical eyelet or opening 16*b*, and that filament 38 extends through vertical eyelet or opening 16*c* in the bottom bracket 16. The upper filament 37 is looped or reversed through a pair of adjacent vertical eyelets or openings 12*a* and 12*b* in the upper mounting bracket 12, see particularly FIGS. 2 and 6. The filaments 37 and 38 thus extend in an interleaving relation through eyelets or openings. For easy and effective operating of the pulley 33 and thus raising and lowering of the sight 23 through the agency of the slider 20, a finger receiving and operated, notched or sprocket-like finger-operated wheel 40 is securely mounted on the shaft 34 to rotate it. The wheel 40 is shown provided with a group of four radial spokes 41 that extend radially and axially outwardly (see FIGS. 8 and 11) and that are adapted to receive and bypass the index finger of the left hand of the archer in such a manner that the pulley 40 can be turned or rotated by the index finger to move the sight up and down. It is only necessary to flex or unflex the index finger of the hand in engagement with one or a pair of the outwardly extending spokes 41. It will be noted that four spokes 41 are shown in an equally spaced arrangement and have their outer radial ends turned-outwardly in the direction of the axis of the shaft 34. In FIGS. 2, 3 and 4, a bristle type of arrow rest 45 is shown replaceably positioned in a side opening to project slightly outwardly from the stock portion to present an arrow guide.

I claim:

1. In a variable sight operating device for an archery bow, a slide means for supporting a sight, said slide means being adapted to be mounted on the belly of a bow for upward and downward movements, a mounting structure adapted to be secured on the back of a bow, a shaft rotatably supported on a rear end portion of said mounting structure, winding and unwinding pulley means mounted for rotation by said shaft, a finger-operative actuating means secured on an end of said shaft for rotating said pulley means clockwise and counterclockwise, a first and second filament, means attaching said first and second filaments to said pulley means so that said first filament will wind on said pulley means when said pulley means is rotated in a counterclockwise direction and the second filament will wind on said pulley means when said pulley means is rotated in a clockwise direction, means connecting the opposite ends of said filaments to said slide means for moving said slide means upwardly when said first filament is being wound on said pulley means during counterclockwise rotation of said pulley means and for moving said slide means downwardly when said second filament is being wound on said pulley means during clockwise rotation of said pulley means.

2. In an operating device as defined in claim 11, said mounting structure having a base plate portion adapted to be secured on a back of a bow above the hand grip portion thereof, said mounting structure also having an angle-shaped forward end portion extending downwardly forwardly from said base plate portion with its forward end in substantial alignment with a hand grip portion of a bow, and said actuating means being supported by said end portion and said actuating means being of sprocketlike construction for receiving the index finger of an operator'3 hand that is being maintained in a secure gripping relation about a hand grip portion of a bow.

3. In an operating device as defined in claim 11, a sighting means adapted to be secured to a belly of a bow above a hand grip portion said mounting structure having a base plate portion adapted to be secured to a back of a bow, and said base plate portion and the sighting means having eyelet portions for guiding said first and second filaments in an operatively connected relation between said pulley means and said slide means.

4. In an operating device as defined in claim 1, including a sighting means comprising an upper bracket and a lower bracket adapted to be removably secured to a bow, a slide bar extending vertically between said upper and lower brackets, said slide means having a sight, said slide means being positioned for sliding movement on said bar, a distance calibrating member extending between said upper and lower positioning brackets and adjacent said bar, said slide means having lug means at its opposite vertical ends for receiving, respectively, the other end portions of said first and second filaments, the other end portion of said first filament being secured to an upper lug of said lug means to extend in an interleaving relationship through said upper positioning bracket and downwardly and forwardly to said pulley means, and the other end portion of said second filament being secured to a lower lug of said lug means to extend in an interleaving relationship through said lower bracket and forwardly to said pulley means.

5. In an operating device as defined in claim 1, said actuating means being a spoke-like wheel having spoke portions extending radially outwardly from said shaft and, at their outer ends, extending longitudinally of said shaft and outwardly from said shaft to receive an index finger of an operator's hand that is being employed in a gripping position about a hand grip portion of a bow.

6. In an operating device as defined in claim 1, said pulley means having a pair of adjacent compartments, and the one end of said one filament being secured within one of said compartments and one end of said other filament being secured within the other of said compartments.

7. In an operating device as defined in claim 6, said actuating means being a spokelike wheel, said pulley means and said spokelike wheel being secured on said shaft for rotation therewith, a bifurcated mounting bracket carried on the end portion of said mounting structure, and said shaft being rotatably mounted and extending across said bracket and at one end beyond said bracket, and said spokelike wheel being secured on the extended end of said shaft.

8. In an operating device as defined in claim 6, said mounting structure having a mounting plate portion for removably securing it on a back of a bow, and an eyelet projecting from said mounting plate to receive and guide said pair of filaments in an operating relationship backwardly along a wide side face extent of a bow to said slide means, the ends of said filaments being operatively connected to opposite ends of said slide means, and means operatively guiding said pair of filaments to their point of operative connection with said slide means for effecting up and down movements of said slide means.

9. In a variable sighting device a slide means having a vertically extending slide slide-receiving bar, said slide means being operatively mounted for up and down movement on said bar, said slide means supporting a sight member, a pair of end positioning brackets adapted to mount opposite end portions of said bar on a belly of a bow adjacently above the hand grip portion thereof, said slide means having an upper and a lower eyelet lug extending there-from, a mounting plate adapted to be secured on a back of bow adjacently above the hand grip portion thereof, said plate having a forwardly downwardly extending arm portion, a rotatable shaft mounted on a forward end of said arm portion and in a forwardly spaced relationship with respect to a hand grip portion of a bow, a dual compartment pulley means operatively carried on said shaft, a spokelike operating wheel on said shaft for rotating said pulley means, said operating wheel being constructed to receive an index finger of a hand of an archer that is positioned on a hand grip portion of a bow, first and second filaments, said first filament being connected at one end within one compartment of said pulley means for winding-up movement thereon when said operating wheel is rotated in a counterclockwise direction and for unwinding movement with respect thereto when said wheel is rotated in a clockwise direction, said second filament being connected at one end within the other compartment of said pulley means for winding up movement thereon when said operating wheel is rotated in a clockwise direction and for unwinding movement with respect thereto when said wheel is rotated in a counterclockwise direction, guide means for operatively guiding said pair of filaments to said slide means, an opposite end of said first filament being connected to said upper eyelet lug and the opposite end of said second filament being connected to said lower eyelet lug of said slide means for moving said slider upwardly along said bar when said operating wheel is actuated counterclockwise by an index finger of an operator and for moving said slide means downwardly along said bar when said operating wheel is actuated clockwise by an index finger of an operator.

* * * * *