United States Patent [19]

Davidson

[11] **3,875,674**

[45] **Apr. 8, 1975**

[54] **AUTOMATIC RANGE FINDING BOW SIGHT**

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[22] Filed: **May 8, 1972**

[21] Appl. No.: **251,043**

[52] **U.S. Cl.** **33/265**

[51] **Int. Cl.** **F41g 1/00;** F41b 5/00

[58] **Field of Search** 33/265, 261

[56] **References Cited**

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Assistant Examiner—Steven L. Stephan
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[57] **ABSTRACT**

My sighting device for an archer's bow provides a bow sight which automatically finds the range of objects at various distances from the shooter simultaneously with the aiming of the bow and arrow at the object by the archer.

4 Claims, 11 Drawing Figures

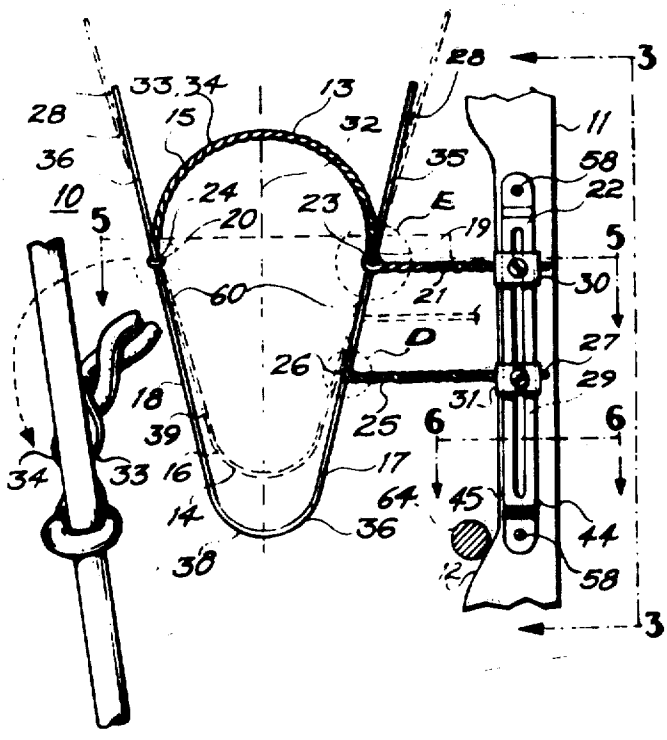
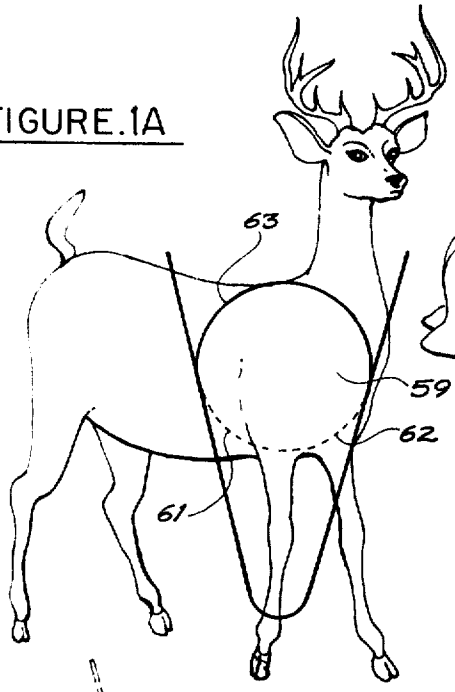


FIGURE.1A



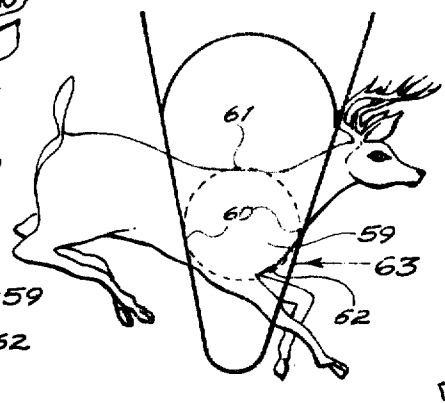
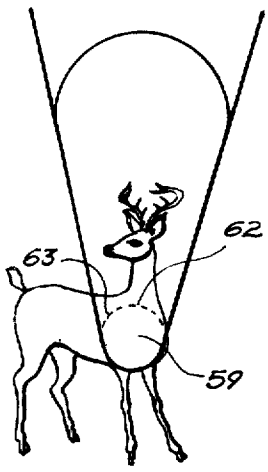
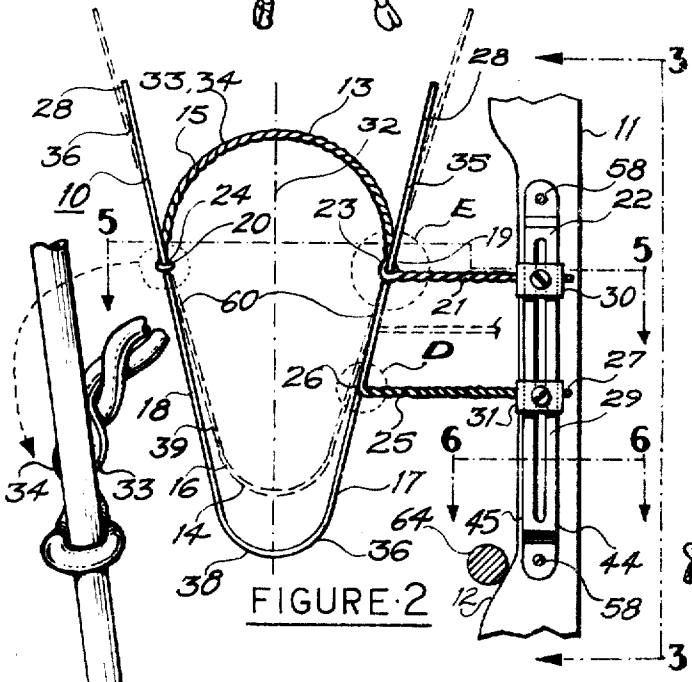


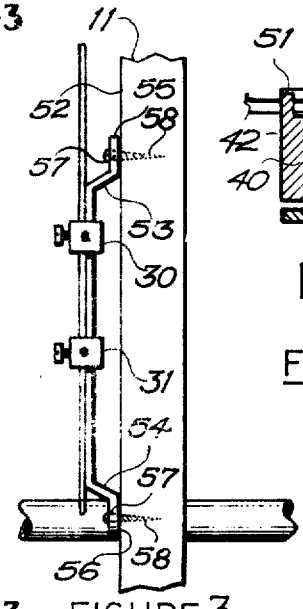
FIGURE.1B

FIGURE.1C

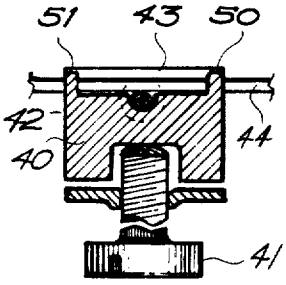




FIGURE·2

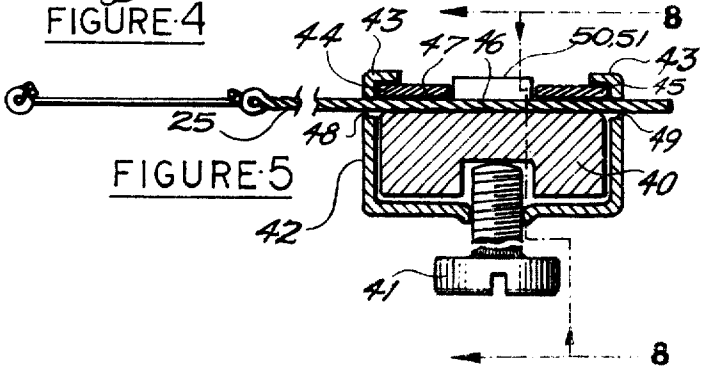


FIGURE·3

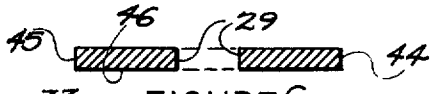


FIGURE·8

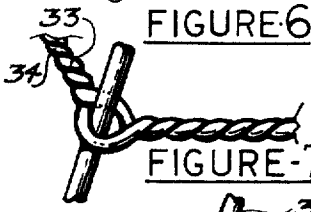
FIGURE·4



FIGURE·5



FIGURE·6



FIGURE·7 (E)

FIGURE·9 (D)

AUTOMATIC RANGE FINDING BOW SIGHT

BACKGROUND OF THE INVENTION

1. Field of the Invention

My invention relates to sighting devices for an archer's bow and more particularly to an automatic range finding sight for an archer's bow which automatically finds the range of the object or target at the same time that the bow and arrow are aimed at the object or target by an archer.

2. Description of the Prior Art

A long standing problem in the archery field resides in determining the range of the target, in other words, the distance of the target from the archer, because the trajectory or arc of an arrow is much greater than that of a bullet from a gun which results in greater chance of inaccuracies in shooting an arrow from a bow than a bullet from a gun. The shooting characteristics of a bow, which involve the amount of force needed to bend the bow, the rate at which the force is applied, the forces released when the bow string is released, the spine of the arrow, all effect the trajectory and flight of the arrow when the arrow is released from the bow, and must be considered when aimed at a target. I am aware that there are many sighting devices heretofore proposed which are offered to aid in aiming a bow to hit an object or target and in use the prior devices known to me generally provide a single sight adjustable to one target distance, or multiple sights in which the archer must sight the bow in for each known target range, and after sighting in the bow at each given or known target range, the archer must guess the unknown range of the new or different target once he has left the known range unless he carries a range finder separate from the sight.

SUMMARY OF THE INVENTION

Accordingly, the problems and difficulties of the prior art are obviated by the features of the present invention in which I incorporate a range finding feature as an integral part of the sight, and once my device is sighted in at the generally effective maximum and minimum range of the bow, the range of the target between the minimum and maximum range will be automatically found by sighting the bow at a target located at any range in between said minimum and maximum range.

Therefore, it is among the objects of my invention to provide an automatic range finder sight for a bow.

Another object of this my invention is to provide an automatic range finder bow sight for a hunting bow which is adjustable to suit the variable requirements of the bow and arrow, the archer, and the distance to the game being hunted.

Another object of this my invention is to provide a unique adjustment feature for adjusting my range finder bow sight to the hunting requirements of the game being hunted by the archer.

BRIEF DESCRIPTION OF THE DRAWING

Further objects and advantages of the invention will be apparent from the following description taken in conjunction with the accompanying drawing and claims, wherein:

FIGS. 1 (A, B, C) shows my range finder sight as it would appear in use in deer hunting.

FIG. 1a shows a deer at generally minimum range, FIG. 1b shows a deer at an inbetween range, and FIG. 1c shows the deer at the generally maximum range.

FIG. 2 is a front view of my range sight showing the sight mounted in a bow.

FIG. 3 is an end view of my sight taken on line 3—3 of FIG. 2.

FIG. 4 is an enlarged view taken of the structure shown in circle F of FIG. 2.

FIG. 5 is a view taken on line 5—5 of FIG. 2.

FIG. 6 is a view taken on line 6—6 of FIG. 2.

FIG. 7 is an enlarged view of the structure shown in circle E of FIG. 2.

FIG. 8 is a view taken along line 8—8 of FIG. 2.

FIG. 9 is an enlarged view of the structure shown in circle D of FIG. 2.

DESCRIPTION OF THE PREFERRED EMBODIMENTS

Referring now to FIGS. 1 and 2, the novel range finder sight of the present invention is generally denoted by the numeral 10. The sight 10 is mounted on conventional bow 11 adjacent the arrow rest 12, and includes an upper sight portion 13, and a lower sight portion 14. Said upper sight portion is formed generally in the outline of an annular or semi-circular greater arc sighting portion 15 and the lower portion 14 is formed generally in a V outline 16 having an inner tangential arm 17 and an outer tangential arm 18 meeting said arc portion at a theoretical inner arc point or free end 19 and a theoretical outer arc point or free end 20. Said upper arc portion is spaced outwardly from and adjacent to said bow rest, and further includes a generally straight cantilevered arm portion 21 extending from said inner arc point generally perpendicular to the length of said bow to a sight mount 22, which mount 22 is fixed to said bow. A guide means or hidden inner loop 23 and hidden outer loop 24 are formed in said upper arc portion at points 19 and 20 respectively, for guiding said tangential arms 17 and 18 therein to adjust and move said upper sight portion in relation to said lower sight portion. Said lower right portion further includes a generally straight cantilevered arm portion 25 which has its outer extremity fixed to said inner tangential arm at a juncture 26 substantially free end below each of said inner arc point 19, said arm extending parallel to said arc arm portion with its inner end 27 extended to said mount. Said tangential arms 17 and 18 are frictionally disposed in said loops so that a substantial portion 28 of said arms extend upwardly through said loops to allow vertical adjustment of said lower sight portion and upper sight portion with respect to each other.

Said sight mount is provided with a vertical adjustment means or slot 29. Referring to FIGS. 3, 5, 6, and 8 each of said cantilevered arms extend beyond said slot on the side opposite said sight 10 and are fastened to said mount by two separate vertically adjustable clamping means including an upper slide fastener or clamp 30 and a lower slide fastener 31. Said upper and lower clamps secure said cantilevered arms in the location desired on said mount. The entire sight is also adjustable up and down on said mount without changing the relationship of said upper sight portion with respect to the lower sight portion by moving said clamps equidistantly along said slot.

When said upper sight portion and said lower sight portion are assembled together on said bow they form a vertically elongated closed annular opening and a theoretical line **32** bisecting said upper arc portion and the V portion lies generally parallel lengthwise lateral to and adjacent said bow.

Referring now to FIGS. **4, 5, 7,** and **9** said upper and lower sight portions are preferrably formed of small gauge tempered wire strands. Upper sight portion strands **33** and **34** are twisted together for strength and to facilitate forming said inner loops **23** and outer loop **24** from said wire strands as shown in FIGS. **4** and **5.** Said V portion wire strands **35** and **36** are separated at juncture **26** with a single strand **35** extending upwardly through said inner loop **23** to form the upper portion **37** of said inner tangential arm, and strand **36** extending downwardly to form the semi-circular small bottom arc sighting portion **38** which is inscribed in the bottom **39** of said V sighting portion, and the entire outer tangential arm **18.**

The clamps **30** and **31** of said clamping means shown in FIGS. **3, 5, 6,** and **8** are identical to each other and include a plunger **40** actuated by a screw **41** threaded in bracket **42.** The bracket **42** has two reversely bent flanges **43** which straddle and grip the opposite sides **44** and **45** of said mount. Said wire strand arm **25** is introduced between the bottom **46** of said plunger and the top **47** of said mount through openings **48** and **49** in said bracket, and when said screw is turned, force is exerted to grip arm between said top surface **47** of said mount and said bottom face **46** of said plunger. Said plunger is guided in said slot by tangs **50** and **51** depending therein. Said mount of elongated outline and is bridged to clear the front face **52** of said bow.

The mount includes downwardly bent flanges **53** and **54** and flat feet **55** and **56,** through which holes **57** of said feet, screws **58** are inserted and screwed into said bow front face to secure said mount and said bow sight thereto.

In operation said bow sight of my invention is mounted on and secured to a bow in generally an estimated location adjacent said arrow rest and arrow **64** for initial test shooting.

A target **63,** shown as superimposed on zone **59** is placed at preferrably **15** yards from the shooter. Said target is preferrably of **13** inches in diameter for white tailed deer. At the **15** yard range, said upper sight portion is adjusted to coincide with said **13** inch circle until the shooter is consistently hitting the target with arrows. The adjustment of said upper sight portion depends upon the shooting characteristics of the bow and arrow used, and the technique of the archer. When the **15** yard range has been determined and the upper sight portion set and clamped in said adjusted position, the shooter moves back or places the target at the **45** yard range where he shoots and adjusts said lower sight portion until the arrows are consistently hitting the target at **45** yards with said lower sight portion coinciding with said **13** inch circle, and said lower sight portion is then securely clamped to said mount in lower arc position on said mount. As shown in FIGS. **1a, 1b,** and **1c,** the vital organ portion **59** of a white tailed deer lie generally within a **13** inch theoretical circle **61** placed just above the foreleg and said circle will then encompass the heart, lungs and back of the deer. It is apparent that this vital organ portion does not change in size when a deer is near or far although it appears to do so to the observer. It is this apparent changing of size of said vital organ that is utilized between said **15** yard range and said **45** yard range to determine the intermediate range of the target. As shown in FIG. **1b,** the vital organ portion or zone **59** appears to the shooter to be between said upper arc and said lower arc and he adjusts the elevation of the bow until the inner walls **60** of said tangential arms **17** and **18** visually touch tangentially the circumference **61** of theoretical 13 inch circle **62** and shoots said arrow in accurate trajectory to hit the target, object, or deer. It is understood that the initial size of said upper and lower arc will depend upon the size of the animal being shot at, that is, larger with the larger animal and smaller with the smaller animal. Said sight can be the same proportions for all conventional standard sized archery targets. Said upper sighting arc is preferrably 5/8 inches in diameter. Said lower arc is preferrably 3/16 inches in diameter, and overall height of the arcs 2 and ¼ inches adjustable down to 1 inch for white tailed deer.

The scope of the invention is not to be considered as limited by the preceding detailed description.

I claim:

1. In a bow sight, the combination of, an upper near sight opening formed generally in the outline of an upwardly turned greater arc having ends, a lower sight portion opening formed generally in the outline of a pair of non-parallel arms connected at their bottom ends and having their top ends upwardly turned, said lower sight being adjustably mounted with said arms being slidably connected to said ends of said greater arc so that said lower sight can be adjusted toward said greater arc, thus increasing the angle between said arms, and adjusted away from said greater arc, thus decreasing the angle between said arms.

2. The invention as set forth in claim **1** wherein said ends of said arc terminate in loops defining eyes, an upper lateral support arm depends outwardly from one of said loop eyes, said arms of said lower sight portion are adjustably mounted in said eyes, and one of said arms has a lateral support arm extending therefrom on the same side of said sight as said upper lateral support arm and generally parallel thereto.

3. The invention as set forth in claim **2** wherein said arc portion, said loops and said upper lateral arm are formed by twisting two strands of wire together, and said lower sight lateral arm is formed by twisting two strands of wire together, the wires being separated at the junction of said lateral arm with said inner intersecting arm into two separate single wires which form said lower sight portion.

4. The invention as set forth in claim **1,** including means for adjustably mounting said sight on a bow to accomodate and secure adjustment of said lower sight arms in sighting relationship with respect to said greater arc ends.

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