June 23, 1953 B. E. FREDRICKSON 2,642,661

ARCHERY SIGHT

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FIG 1

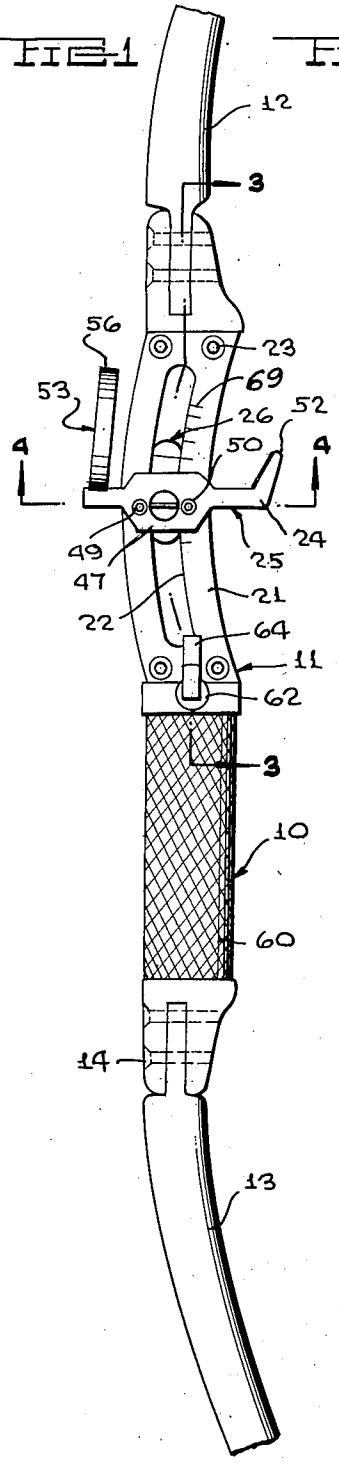

FIG 2

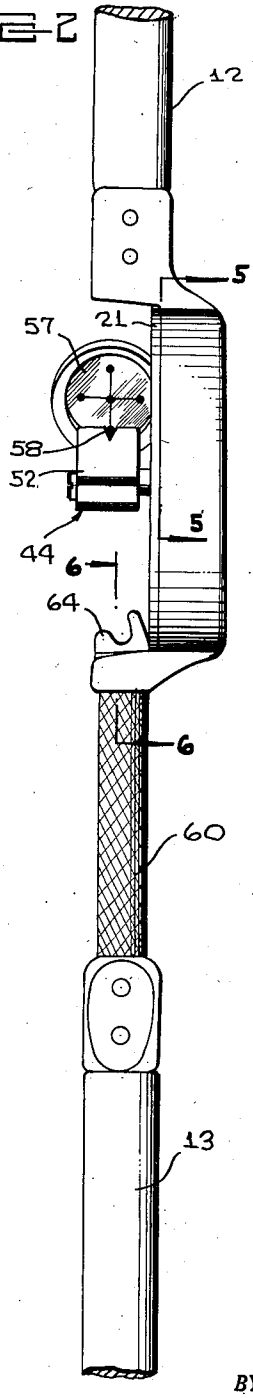

FIG 5

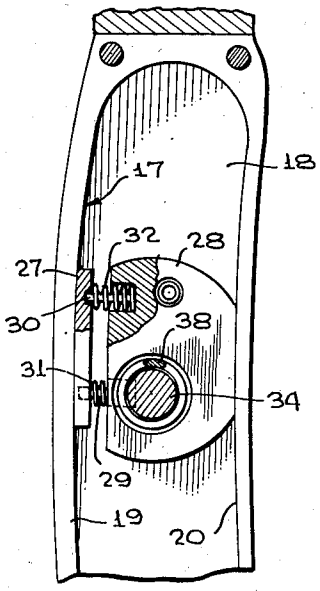

FIG 6

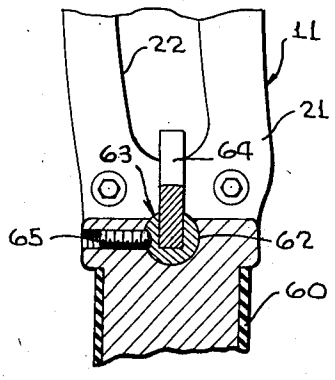

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FIG 3

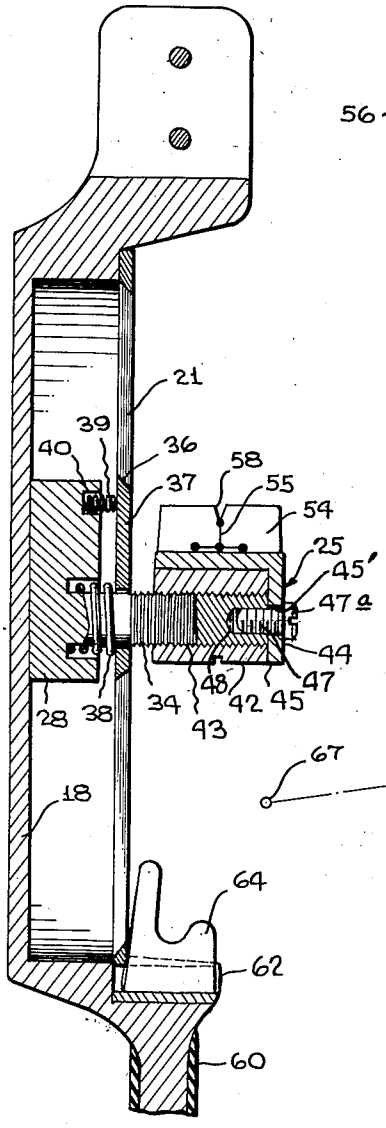


FIG 4

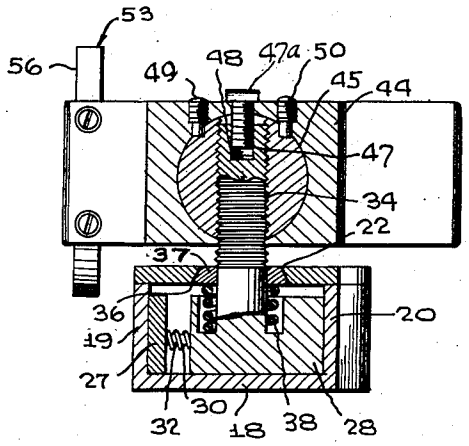
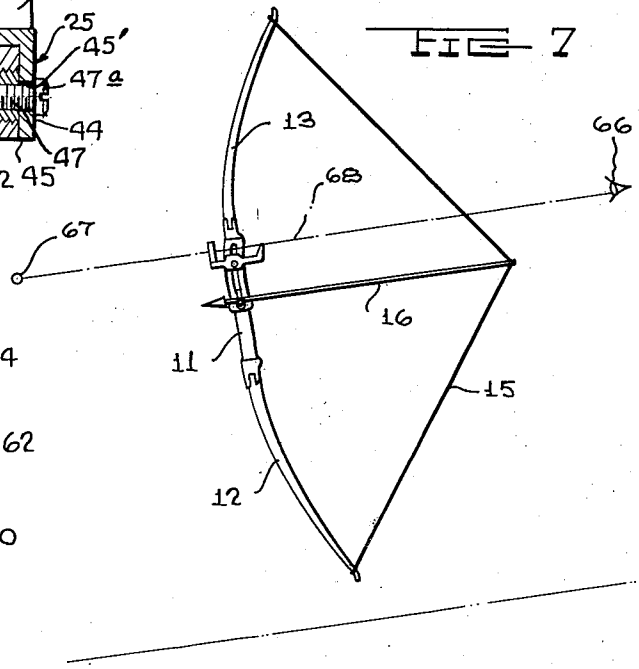


FIG 7



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ARCHERY SIGHT

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7 Claims. (Cl. 33—46)

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This invention relates to an archery sight for a long bow.

In prior application, Serial No. 77,881, filed February 23, 1949, Patent 2,542,501, granted February 20, 1951, there is disclosed means for mounting the sight base of an archery sight on the hand grip thereof, such means comprising a latch dog engageable with rack teeth formed on the walls of a guideway in the hand grip.

This invention relates to the same type of archery sight in which the sight base is mounted on the hand grip by spring-biased pressure plates which are received within and engaged against an arcuate, longitudinally extending guideway provided in the hand grip.

Accordingly, it is an object of this invention to provide a novel mounting structure for a sight base which is particularly adapted to provide a rigid support for the sight base on the hand grip.

Another important object is to provide reticle markings on a plate associated with a lens structure embodied in the invention, said plate and lens structure being so arranged as to permit accurate sighting at widely varying ranges without adjusting the position of the lens mount embodied in said structure.

Another object of this invention is to provide a mounting structure for a sight base which is particularly adapted to support a sight base in a select, relatively rigid position along an arcuate path, and permit movement of said sight base to any other select position along said path upon the application of a pressure to the sight base.

A further object of this invention is to provide an archery sight which is provided with novel sighting structure and with an emergency sight adapted for use upon failure of the regular sighting structure.

A still further object of this invention is to provide an archery sight which is relatively simple in structure and cheap to manufacture.

The above and still further objects and advantages of the invention will become apparent upon consideration of the following detailed description of the invention, when taken in conjunction with the accompanying drawings, wherein:

Figure 1 is a side elevational view of the archery sight of the present invention, shown supported between upper and lower bow sections;

Figure 2 is a rear elevational view of the archery sight of the present invention, taken from the right of Figure 1;

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Figure 3 is an enlarged fragmentary sectional view taken substantially along the line 3—3 of Figure 1;

Figure 4 is an enlarged fragmentary sectional view taken along the line 4—4 of Figure 1;

Figure 5 is an enlarged fragmentary sectional view taken along the line 5—5 of Figure 2;

Figure 6 is an enlarged fragmentary sectional view taken along the line 6—6 of Figure 2; and

Figure 7 is an elevational view on a reduced scale, showing the entire assembly of the archery sight and the bow sections in use.

Referring now more particularly to the drawings, wherein like reference numerals have been used throughout the several views to designate like parts, there is shown the archery sight of the present invention, generally indicated by the reference numeral 10, which embodies a hand grip 11 detachably secured between the upper and lower bow sections 12 and 13 by any suitable means, such as the screws 14. Connected between the free ends of the sections 12 and 13 is a bow string 15 for the projection of an arrow 16, Figure 7.

Intermediate its ends, the hand grip 11 is provided with a vertically disposed guideway which extends inwardly from one face of the hand grip, the guideway being designated by the reference numeral 17 and including a base wall 18 and opposed arcuate side walls 19 and 20. As clearly shown in the several views, the guideway 17 is formed by recessing the hand grip 11 and by securing a cover plate 21 provided with an elongated arcuate slot 22 over the open mouth of the recess by any suitable means, such as the screws 23.

Positioned exteriorly of and transversely of the hand grip 11 contiguous to the cover plate 21 is a sight base 25 which is supported on suitable mounting means 26 for movement along the guideway 17. The mounting means 26 embodies a pair of pressure plates or abutments 27 and 28 positioned within the guideway 17 in side-by-side, spaced, confronting relation with respect to each other. Carried by the confronting face of the abutment 28 are the pins 29 and 30 which have their free ends received in suitable recesses provided in the confronting face of the abutment 27. As clearly shown in Figure 5, the portions of the abutment 28 contiguous to the pins 29 and 30 are cut away to provide bores for the reception and support therein of the springs 31 and 32 which are circumposed about the pins 29 and 30 and urge the non-confronting faces of the abutments 27 and 28 into bearing engage-

ment with the arcuate side walls 19 and 20 of the guideway 17. The abutment plates 27 and 28 normally provide a relatively rigid support for the sight base 25 on the hand grip 11, but permit movement of the sight base to any other position along the guideway upon the application of an upwardly or downwardly directed pressure to the sight base.

Arranged transversely of the hand grip 11 is a pin 34 which has one end extending into the guideway 17 and secured to the abutment 28, an has the other end threaded and rotatably supporting the sight base 25.

As clearly shown in Figures 3 and 4, the bounding portions of the arcuate slot 22 of the guideway 17 are cut away transversely inwardly and at an angle with respect to the exposed face of the cover plate 21 to provide a seat 36 diverging outwardly from the outer face of the cover plate 21. Surrounding the pin 34 is a thrust bearing 37 which is biased into engagement with the seat by means of the coil spring 38 which is operatively connected to the pin and to the hand grip, the coil spring 38 normally urging the abutment 28 into bearing engagement against the base wall 18 of the guideway 17. To further insure the engagement of the thrust bearing 37 with the seat 36, a small coil spring 39 has one end operatively connected to the thrust bearing 37 and has the other end received within a bore 40 provided in the abutment 28, the spring 39 being clearly shown in Figure 3.

As clearly shown in Figures 3 and 4, the sight base 25 embodies a cylindrical locking member 42 which is provided with a transversely extending, threaded bore 43 for the extension therethrough of the adjacent threaded end of the pin 34 to thereby rotatably support the locking member 42 for rotary movement about the pin 34 as a pivotal axis. Engaged above and supported upon the locking member 42 is the support 44 of the sight base 25, the support 44 being provided with a cylindrical seat 45 for the reception of the locking member 42. The pin 34 and the locking member 42 cooperate to support the support 44 of the sight base 25 for vertical adjustment. Suitable means are carried by the support of the sight base and are operatively connected to the pin 34 for securing the sight base to the locking member 42 for adjustment therewith about the axis of pin 34. As clearly shown in Figure 4, the means embodies a headed set screw 47 which extends through an aperture 45' in the support 44 and is in threaded engagement with the threaded axial bore 48 in the free end of the pin 34, the head 47a of the set screw 47 abutting against the outer face of the support 44. Arranged at opposite sides of the headed set screw 47 are the small set screws 49 and 50 which are threadedly supported in the support 44 and engage in recesses formed in the periphery of the locking member 42 to preclude movement of the support 44 with respect to the locking member. Accordingly, the archer, having determined the vertical angulation and locked the support 44 by tightening the screw 47, can be assured that the set screws 47, 49 and 50 will hold the support 44 and locking member 42 against relative movement in the selected position of adjustment to which they are moved about the axis of pin 34 in obtaining said vertical angulation.

Carried by the sight base is the sighting means which embodies a plate 52 and a lens structure 53. The plate 52 is carried contiguous to the rear end of the support 44 of the sight base 25, and is inclined at an angle with respect to the support.

As shown in Figure 3, the front face 54 of the plate 52 is provided with reticle markings 55, the reticle markings including white lines on a dark background. As will be noted from Figure 2, the markings comprise a vertical series of three dots with straight lines extending between the dots of said series, and a similarly joined, horizontal series, the center dot of the respective series being common to both series. The lens structure 53 embodies a lens mount 56 carrying a lens 57, the lens being disposed in spaced, confronting relation with respect to the front face 54 of the plate 52 and providing a means for sighting a target and for visually displaying a virtual image of the reticle marking 55. To this end, the lens is of plane formation and has a reflecting surface coated thereon. It is to be noted that a small V-shaped notch is provided above the reticle markings, the notch being designated by the reference numeral 58. The purpose of the small V-shaped notch is to give an emergency point of aim in event of the failude of the regular sight formed by the cooperation of the plate 52 and the lens structure 53. A portion of the hand grip contiguous to the lower end thereof is provided with a rubber covering 60, the covering being secured to the hand grip and forming a non-slip grip for the archer.

As clearly shown in Figure 6, the portion of the hand grip intermediate the cover plate 21 and the rubber cover 60 is provided with a transversely extending recess 62 which is disposed normal to the cover plate 21. Positioned within the recess 62 is a slide 63 which is laterally slidable in the vertical recess and carries an arrow rest 64 of any suitable form. A set screw 65 is operatively secured to the slide and includes a shank which is threaded through the adjacent portion of the hand grip. The free end of the set screw extends laterally out of the hand grip and is provided with any suitable means, such as a slot, for conveniently turning the set screw. Upon effecting the rotary movement of the set screw, the slide, together with the arrow rest, may be locked in select positions of the lateral adjustment with respect to the hand grip.

In actual use, Figure 7 shows a line of sight from the archer's eye to a target 67, the line of sight being indicated by the reference numeral 68. However, the particular sight setting shown in Figure 7 may not be correct for hitting the target 67, whereby it will be necessary to tilt the bow forwardly or rearwardly. Thus, the archer changes the sight setting by pressing on the sight base 25 to thereby effect the movement of the abutments 27 and 28 along the guideway 17. The surface of the hand grip adjacent slot 22 is provided with range graduations 69 to facilitate correct adjustment of the abutments along the guideway. In view of the fact that the support 44 of the sight base 25 can be fixedly secured in a desired angular relation with respect to the hand grip, the aforementioned movement will change the angular relation of the base to the bow. In this connection, the radius of curvature of the slot 22 approximately equals the distance from the eye of the user to the sight.

The reticle markings are of importance, in that the upper dot of the vertical series is usable for close shooting (under 60 feet), the cen-

ter dot for average ranges of 120 feet, and the bottom dot for ranges over 150 feet, without change in the position of the lens mount. The dots are of greater value in this connection than ordinary crossed lines, since they center on the target more easily.

Although one embodiment of the sight base of the present invention has been described, it is readily apparent that numerous modifications can be made without departing from the spirit of the invention as set forth in the appended claims.

What I claim is:

1. In an archery bow, a hand grip provided with a vertically extending guideway intermediate its ends and extending inwardly from one face thereof, said guideway including a base wall and arcuate side walls, a sight base positioned transversely of said hand grip, means mounting said sight base for movement along said guideway, said means comprising a pair of spring-biased abutments positioned within said guideway and having their non-confronting faces bearing against said arcuate side walls, and a pin arranged transversely of said hand grip and having one end extending into said guideway and secured to one of said abutments and having the other end rotatably supporting said sight base.

2. In an archery bow, a hand grip provided with a vertically extending guideway intermediate its ends and extending inwardly from one face thereof, said guideway including a base wall and arcuate side walls, a sight base positioned transversely of said hand grip, means mounting said sight base for movement along said guideway, said means comprising a pair of spring-biased abutments positioned within said guideway and having their non-confronting faces bearing against said arcuate side walls, a pin arranged transversely of said hand grip and having one end extending into said guideway and secured to one of said abutments and having the other end rotatably supporting said sight base, and spring means operatively connected to said pin and said hand grip for urging said one of said abutments into engagement with said base wall.

3. In an archery bow, a hand grip provided with a vertically extending guideway intermediate its ends and extending inwardly from one face thereof, said guideway including a base wall and arcuate side walls, a sight base positioned transversely of said hand grip, means mounting said sight base for movement along said guideway, said means comprising a pair of spring-biased abutments positioned within said guideway and having their non-confronting faces bearing against said arcuate side walls, a pin arranged transversely of said hand grip and having one end extending into said guideway and secured to one of said abutments and having the other end rotatably supporting said sight base, spring means operatively connected to said pin and said hand grip for urging said one of said abutments into engagement with said base wall, the bounding portions of said guideway being cut away transversely and inwardly at an angle with respect to said one face of said hand grip to provide a seat diverging inwardly from said one face of said hand grip, and a thrust bearing surrounding said pin and operatively connected to said spring means for engagement in said seat.

4. In an archery bow, a hand grip provided with a vertically extending guideway intermediate its ends and extending inwardly from one face thereof, said guideway including a base wall and arcuate side walls, a sight base positioned transversely of said hand grip, means mounting said sight base for movement along said guideway, said means comprising a pair of spring-biased abutments positioned within said guideway and having their non-confronting faces bearing against said arcuate side walls, a pin arranged transversely of said hand grip and having one end extending into said guideway and secured to one of said abutments and having the other end rotatably supporting said sight base, and sight means carried by said sight base.

5. In an archery bow, a hand grip provided with a vertically extending guideway intermediate its ends and extending inwardly from one face thereof, said guideway including a base wall and arcuate side walls, a sight base positioned transversely of said hand grip, means mounting said sight base for movement along said guideway, said means comprising a pair of spring-biased abutments positioned within said guideway and having their non-confronting faces bearing against said arcuate side walls, a pin arranged transversely of said hand grip and having one end extending into said guideway and secured to one of said abutments and having the other end rotatably supporting said sight base, and sight means carried by said sight base, said sight means comprising a plate carried contiguous to the rear end of said sight base and having its front face provided with a reticle marking, and a lens positioned in spaced confronting relation with respect to said plate and secured to said base for sighting a target and for visually displaying a virtual image of said reticle.

6. In an archery bow, a hand grip provided with a vertically extending guideway intermediate its ends and extending inwardly from one face thereof, said guideway including a base wall and arcuate side walls, a sight base positioned transversely of said hand grip, means mounting said sight base for movement along said guideway, said means comprising a pair of spring-biased abutments positioned within said guideway and having their non-confronting faces bearing against said arcuate side walls, a pin arranged transversely of said hand grip and having one end extending into said guideway and secured to one of said abutments and having the other end rotatably supporting said sight base, sight means carried by said sight base, and a rubber cover surrounding a portion of said hand grip and contiguous to one end thereof and secured thereto to provide a non-slip grip.

7. In an archery bow, a hand grip provided with a vertically extending guideway intermediate its ends and extending inwardly from one face thereof, said guideway including a base wall and arcuate side walls, a sight base positioned transversely of said hand grip, means mounting said sight base for movement along said guideway, said means comprising a pair of spring-biased abutments positioned within said guideway and having their non-confronting faces bearing against said arcuate side walls, a pin arranged transversely of said hand grip and having one end extending into said guideway and secured to one of said abutments and having the other end rotatably supporting said sight base, and sight means carried by said sight base, said sight means comprising a plate carried contiguous to the rear end of said sight base and having

its front face provided with a reticle marking, and a lens positioned in spaced confronting relation with respect to said plate and secured to said base for sighting a target and for visually displaying a virtual image of said reticle, said reticle marking including a vertical series of three dots and a horizontal series of three dots, the center dot of each series being common to the other series and the several dots of the vertical series being selectively adapted for sighting at selected different ranges on placement of said sight base, plate, and lens at a selected position upon said guideway.

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