Nov. 12, 1968 A. E. McLENDON 3,410,644

TELESCOPIC ARCHERY SIGHT WHEREIN THE OCULAR LENS IS MOUNTED ON THE BOWSTRING

Filed Nov. 21, 1967 2 Sheets-Sheet 1

Fig. 1.

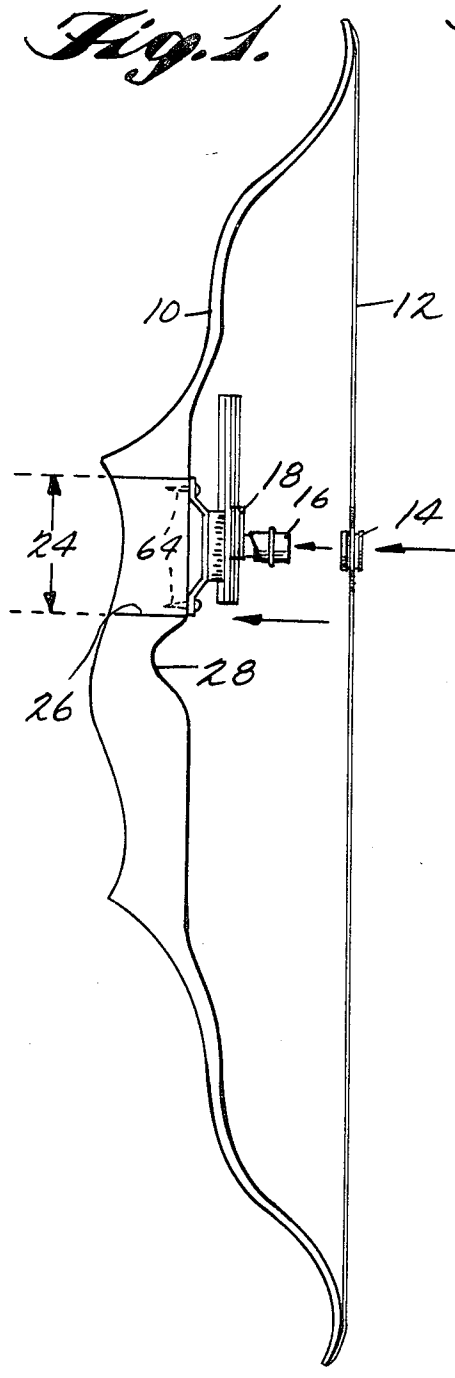


Fig. 2.

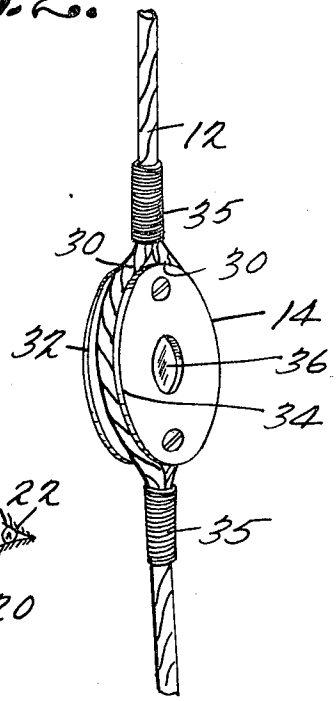
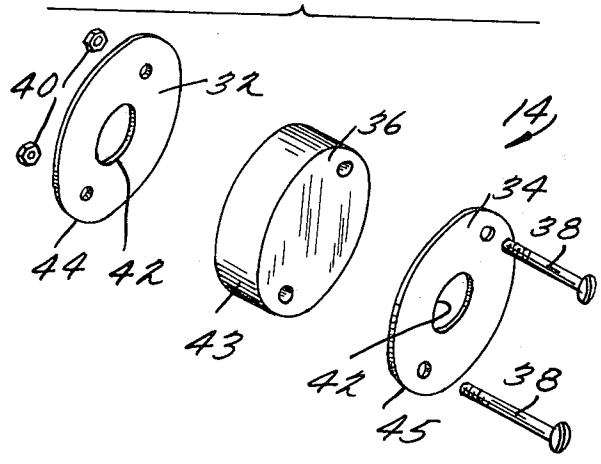


Fig. 3.



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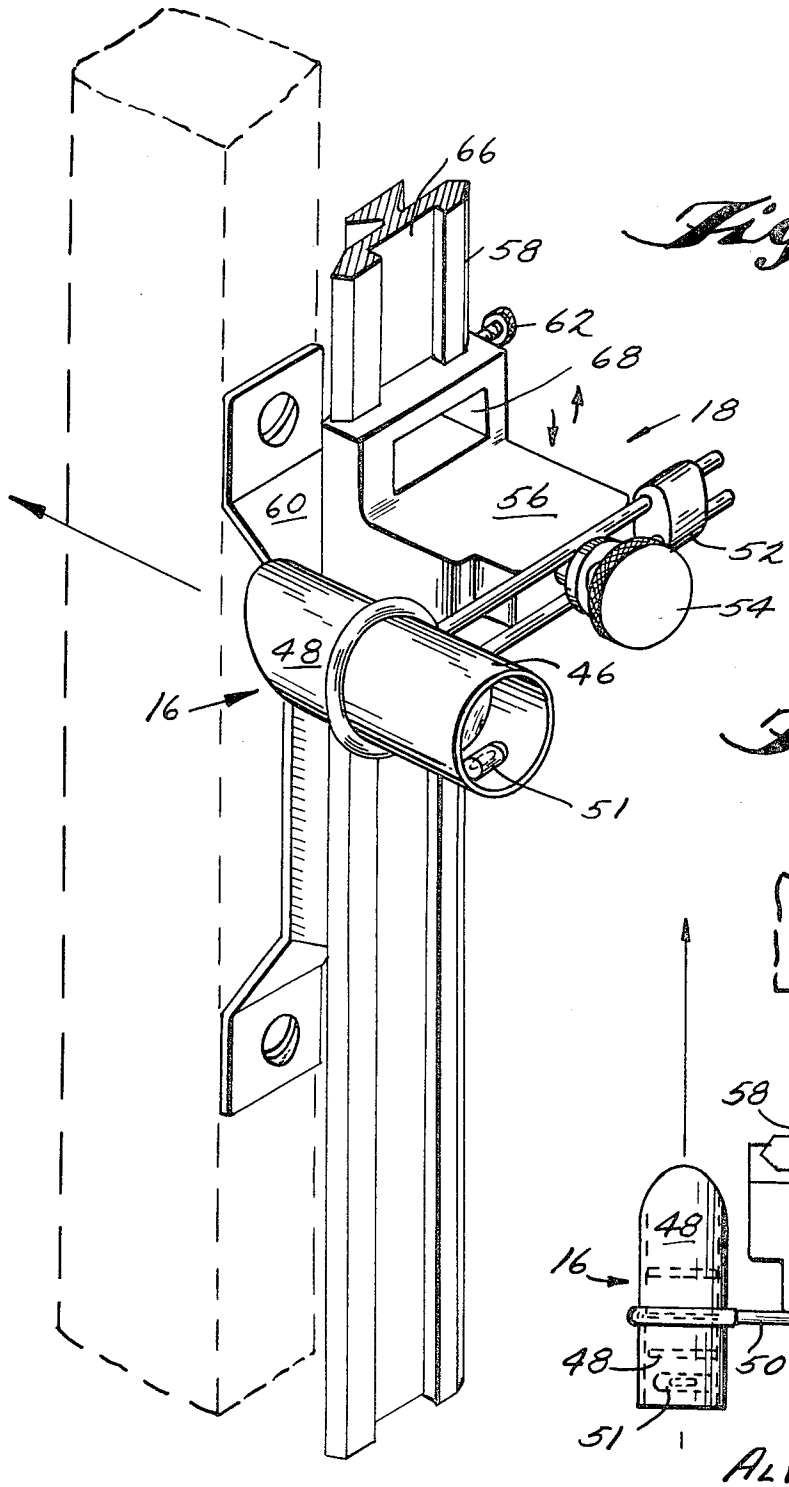

Fig. 4.

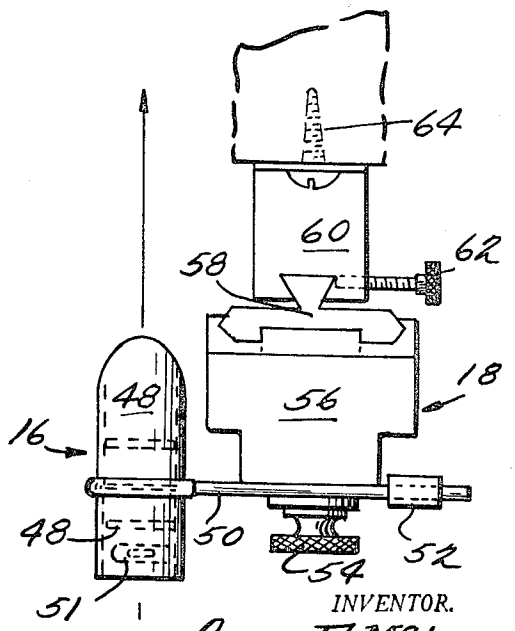

Fig. 5.

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TELESCOPIC ARCHERY SIGHT WHEREIN THE OCULAR LENS IS MOUNTED ON THE BOWSTRING

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ABSTRACT OF THE DISCLOSURE

Telescopic sight means for a bow is disclosed having an optical system comprising at least one optical lens sight means affixed integrally between the strands of the bowstring or mounted upon the bowstring, said lens preferably being sightingly aligned with a second optical lens sight affixed to the bow, whereby the target is magnified.

BACKGROUND OF THE INVENTION

Field of invention

The invention relates to use of archery bows with a projectile, and to projectile sighting guides for such bows. More specifically it relates to the sighting of projectiles be means of geometrical instruments of the light-ray type. Still more particularly, the invention pertains to means for target sighting having a plurality of optical lenses, telescopically aligned.

Description of prior art

Since the dawn of civilization, man has been attempting to improve the accuracy of the bow and arrow. Such attempts have resulted in changes to the bow, such as the advent of the long-bow and the recurve bow. At the same time however, other attempts have been made to improve an archer's accuracy by effecting sight means. These attempts include adaption of pin dot sights, ring sights, notch sights and sights that take into consideration elevation of the bow and cross windage affecting the travel of the arrow. Sights have been designed for the archer who uses either a forward alignment sight on his bow or a rear alignment sight on the bow string, or both.

While such improvements to the sight means have been met with a certain degree of success, such success has heretofore been limited where the target is of any substantial distance from the bowman. Most of the shortcomings of the sighting systems disclosed by the prior art for effecting accuracy over distances greater than a few yards can be blamed upon the proportionately increasing visibility limitations of a target over increasing distances and to the shortcomings of the human eye to accurately focus upon the distant target. Such shortcomings are alleviated when telescopic sighting means are utilized. This fact has been well recognized and attested to in the field of prior arts relative to firearms and the like, but heretofore no one has been able to apply such telescopic principles to archery in an effective manner.

Attempts have been made to adapt telescopic firearms sights to archery purposes by mounting modifications of such sights upon a bow. The very nature and design of the bow with a bowstring has denied practical application of such adaptations. The major problem has been that when the bow is flexed and the bowman is in shooting position, the bow is held at arms length from the bowstring. To make a firearms sight which is secured to the bow and at the same time positioned in front of the eye requires approximately two and one half feet of tubing. Not only is this awkward and cumbersome thereby defeating the desirability of using such a sight, but the natural torque of the bow, even with stabilizers, coupled with the

great length of the narrow tube makes it almost impossible to align and hold a fix upon a target as even slightest motion causes such sight to move off target. Because such a sight results in tunnel vision it is even difficult to rapidly locate the target again.

The present invention discloses means for optical sighting which harmonize with the need to coordinate the bow and bowstring with the positioning of the hands and the alignment of the eye thus overcoming the disadvantageous adaptation to bows of telescopic sights designed for firearms.

There has been many disclosures of sighting means which utilizes eye control between the string and the bow, none of these disclosures have taught advantages of telescopic sighting or the means for securing these advantages for the archer. For instance, Patent 3,199,502 to Stonecipher discloses a sighting element which is integral with the bowstring. This sighting element merely provides a rear alignment which combines a conventional bead sight with a view through the bowstring. This is no way even remotely suggests telescopic alignment. Other patents illustrating the present state of prior art are patents 2,001,470 to Nyvall and 1,239,593 to Grosz. Both of these patents teach rear alignment sighting by bead means upon the bowstring. None of these references, nor any other prior art teachings anticipate the unique invention disclosed herein which makes it possible, for the first time, to accurately, easily, and inexpensively introduce the medium of telescopic magnification of a distant target for archery purposes.

SUMMARY OF THE INVENTION

A method for adapting and using telescopic sight means for archery purposes is disclosed. Also disclosed is telescopic sight means for archery use comprising at least one optical lens positioned relative to the bowstring which is preferably aligned with at least a second optical lens mounted upon the bow.

BRIEF DESCRIPTION OF THE DRAWINGS

FIGURE 1 is a side elevational view of the front alignment telescopic sight means mounted on a conventional adjustable sight secured to a bow.

FIGURE 2 is an enlarged perspective view of the rear alignment telescopic sight means, mounted relative to the bowstring.

FIGURE 3 is an exploded perspective view illustrating the bowstring sight means.

FIGURE 4 is a perspective view of the front alignment telescopic bow sight means mounted on a conventional adjustable sight.

FIGURE 5 is a top plan view of FIGURE 4.

DESCRIPTION OF PREFERRED EMBODIMENTS

FIGURE 1 shows a right hander recurved bow **10** with a bowstring **12**. A rear alignment telescopic sight means **14** is secured by the bowstring **12**. This sight means is better shown in FIGURES 2 and 3. A front alignment telescopic sight means **16** is mounted upon an adjustable sighting arrangement **18** which is well known to the art. Telescopic sight means **16** and the adjustable sight mechanism **18** is seen in FIGURES 4 and 5.

The adjustable sight **18** is mounted on the rear edge of bow **10** in such a manner so as not to interfere with the placing of the arrow along trajectory **20** or with view path **21** of the bowman. The rear sight means **14** is aligned between the eye **22** of the archer and the front sight means **16** so as to provide a direct view path from the eye **22** through sight **14**, sight **16**, and window **24** and onto a given target (not shown). The construction of the recurved bow is well known to the art and thus it will be understood that the arrow shaft rests upon lower

edge 16 of sight window 24 which is cut into the left hand side of the bow. The front sight 16 is mounted to the left of the adjustable sight 18 as would be the common practice with a righthanded bowman. The bow is gripped at the handle 28 by the bowman's left hand, the bowstring 12 is pulled back by the bowman's right hand. With a right-handed bowman the right eye is normally used to view through optical lens 14, lens 16 and the view window 24. The lateral positioning of the front sight 16 would be to the right of the bow for a left-handed bowman as would be the view window 24. Other adjustments for left hand bowman are obvious and in no way limit the invention.

FIGURE 2 shows an enlarged view of the rear sight means 14 secured by the bowstring 12 in the manner most preferred. The sight means is secured between two or more strands 30 of the bowstring. These strands are recessed between two outer plates 32 and 34 so as to create a non-slipping grip upon the optical lens 36 even when subjected to severe bowstring vibrations. Whipping 35 prevents the strands from unraveling.

FIGURE 3 shows an exploded view of the bowstring rear alignment telescopic sighting means 14. A negative lens 36 is mounted between the end plates 32 and 34 by appropriate means, such as by bolts 38, which pass through the end plates and lens and secure said plates and lens together by means of nuts or the like. The end plates have a peep hole 42 through which the archer may view the target.

The particular shape of the lens 36 is not critical to the invention as long as the lens is so ground to provide a proper optical effect. The particular lens illustrated is oblong in shape and the plates 32 and 34 are similarly shaped. The circumference of 43 of the lens 36 is less than the circumferences 44 and 45 of the end peep sights 32 and 34 respectively, so that the strands 30 of the bowstring 12 may be recessed.

Sandwiching the bowstring lens 36 between two peep sight plates 32 and 34 has been found to be a most effective way to retain the sight on the string and keep it in proper alignment with the eye. However, it will be well understood that the lens could be affixed to the bowstring by a variety of means which do not require that the bowstring strands be separated. For instance, the lens could be lashed to the string or secured thereto by clip means or the like.

FIGURES 4 and 5 show a closeup of the forward telescopic sight means 16 and the adjustable sighting arrangement 18 upon which it is mounted. The particular configuration of the sighting means 16 is not critical to the invention. The sighting means illustrated shows a lens 46 to be secured within a hooded ring 48. A level 51 is mounted within the ring sight so as not to obscure the view path while constantly making the bowman aware of the angle of his bow relative to the gravitational pull thereon. While the front sight is shown to be a hood ring sight and the rear sight is shown to be a form of a peep sight, the particular type of sights is not critical. Thus, the lens 46 may well be mounted with a peep sight or bead sight device or cross hairs or the like may be utilized in conjunction therewith. All such alignment devices are known in the art of sighting firearms.

The adjustable sight 18 is well known to the art. The generally U-shaped pin 50 grips the sight 16 and lock means 54 keep the ends of pin 50 together in a gripping relationship. Thumbscrew 54 adjustably secures a pin 50 to vertical adjustment scale means 56 so that the sight 16 may be moved laterally relative to the position of the bow to compensate for windage. Scale means 56 is slidably mounted upon and frictionally held by a second adjustment means 58. A tongue in adjustment means 58 slides within the tongue of receiving means 60 and is held in place by screw 62. Receiving means 60 is fixably secured to the bow 10 by means of screws 64 or the like.

Adjustment means 56 and 58 enable the front alignment optical sight 16 to be vertically slid along the length of the bow to compensate for and align elevation of the bow when shooting at any distance.

It will be well understood by those familiar with the art that proper elevation is determined by trial and error. Thus, in the particular arrangement shown, a blank sheet of paper or insert or like backing 66 is provided along the adjustable sight means 58. Thus, each individual bowman using the adjustable sight arrangement 18 may determine the proper elevation of his particular bow relative to fixed targets under test conditions where distances are known and calibrate his slide adjustment accordingly on backer 66. These calibrators may be read through viewer 68 for proper elevation under non-test conditions. When the sight is moved downward relative to the bow, the bow must be elevated to maintain a line of sight on the target. Such elevation provides proper trajectory for the arrow.

The adjustable sighting arrangement 18 shown is of but one type with which the inventive optical sighting mechanism may be utilized. Examples of other types of conventional sighting means with which the telescopic lenses may be adapted include such devices as the Tournament Master made by Altier Archery Manufacturing Company, and the Longshot Sight manufactured by the Commanche Archery Company.

The particular optical sphere of the lenses 36 and 46 is not critical so long as the effect of viewing through one lens and then the second lens result in a magnification of the target. By way of example, such a magnification has been utilized wherein the rear telescopic bowstring sight 36 is −4 sphere strength and the forward bow sight 46 has been of a +1 sphere.

These sphere strengths have been selected for use on a man's bow where the normal draw length, or distance between the eye and the bow when the bow is flexed in shooting position, is 28 to 29½ inches. Obviously, other sphere strengths may be selected depending on the degree of magnification of the target desired and the draw length of the archer.

While telescopic focus depends in part upon the distance between the lens 36 and 46, the difference in the draw lengths of the average male adult approximates only 1 and 1½ inches. Since the primary desired effect of a telescopic sight is to magnify the target, precise focus is not critical and standard lenses may be utilized in the vast majority of cases. Nevertheless, this invention is not limited to such standard cases. It is conceived that charts listing a multiple of pertinent lenses of different sphere powers, and a variety of draw lengths and degree of magnification desired may be utilized so that the invention may readily be adapted to custom conditions to meet every individual idiosyncracy and need. The use of custom lenses may be enhanced by making the lenses interchangeable so that telescopic adjustments may be readily and easily made depending on field conditions or the performance of the bowman. Fine focusing on standardized telescopic sights utilizing the inventive principles herein disclosed may be achieved in many cases by providing lateral adjustment means for the front lens 46 whereby the lens may be moved closer to or further away from the eye of the archer.

The drawings disclose the use of two single optical lenses telescopically alingned with a rear lens secured by the bowstrings and the front lens mounted on the bow. The scope of this invention obviously includes the use of a plurality of lenses mounted at either or at both locations. A plurality of lenses secured by the string alone could be utilized.

Having disclosed the telescopic sighting means for archery purposes, the method of making such means will now be described. The steps of such methods comprises: determining the draw length of the individual bowman or class of bowman which will be using the bow; determining the degree of magnification desired; selecting the

lenses of the proper positive and negative spheres to secure the desired magnification over the draw length between the lens which is to be mounted on the bow and the lens which is to be secured on or by the bowstrings; securing the lens of negative sphere on the bowstring approximate to the level of the bowman's eye; and mounting the lens of positive sphere strength on the bow along the view path of the archer.

The lens of negative sphere strength is aligned with the archer's eye and the lens of positive sphere strength and target in an unobstructed manner.

Obviously, many modifications and variations of the present invention are possible in light of the above teachings. It is therefore to be understood that within the scope of the appended claims, the invention may be practiced otherwise than as specifically described.

What is claimed is:

1. For an archery bow and bowstring, an optical sight means comprising: at least one optical lens secured at a position on the bowstring approximate the archer's eye when the bowstring is drawn, and at least one other optical lens secured to the bow and telescopically aligned with said at least one optical lens, said at least one optical lens and said at least one other optical lens being constructed to cooperate when the bowstring is drawn to produce a magnified target image as viewed by an archer.

2. An optical sight means as claimed in claim 1 wherein said at least one optical lens has a negative sphere and said at least one other optical lens has a positive sphere.

3. An optical sight means as claimed in claim 1 wherein said at least one other optical lens is positioned integrally with the bow whereby the view path is through the bow.

4. An optical sight means as claimed in claim 1 wherein said at least one optical lens is secured between at least two strands of the bowstring.

5. An optical sight means as claimed in claim 4 wherein said at least one optical lens is mounted between two peep hole sight plates having a circumferential configuration similar to but of greater size than the circumferential configuration of said at least one optical lens, said two peep hole sight plates and lens mounted therebetween being secured in said bowstring by at least two strands passing about the circumference of said at least one lens, said strands being recessed between those portions of said circumference of said peep hole sight plates which are greater than the circumference of said lens whereby slippage of said lens is prevented.

No references cited.

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