COMBINED BOWSTRING DRAW AND TRIGGER RELEASE MECHANISM FOR USE IN ARCHERY

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ABSTRACT

A trigger release mechanism for the bowstring of conventional bows and arrows commonly used in archery, for drawing the bowstring taut and releasing the same to project the arrow forwardly by a light touch of a finger on the trigger of the device. The release mechanism includes a flexible cord that has a looped portion that is looped around a bowstring and then secured by a pivotally mounted holding member which is held in an loop engaging position by a spring. Actuation of the trigger against the spring will free the holding member and permit the full of the drawn bowstring to pivot the holding member forwardly and thus allow the loop to slide off. The bowstring will thus be freed to take a relaxed position.

8 Claims, 8 Drawing Figures
COMBINED BOWSTRING DRAW AND TRIGGER RELEASE MECHANISM FOR USE IN ARCHERY

BACKGROUND OF THE INVENTION

This invention relates to an archery bowstring draw and trigger release mechanism.

FIELD OF THE INVENTION

This invention is particularly directed to an archery bowstring draw and trigger release mechanism which is very light in weight and is comprised of a minimum number of quick and easily replaceable components. The handle of the release mechanism may be gripped by the fingers of either the right or left hand of the archer and in combination with other components of the device used to pull the bowstring taut and release the same when desired by a slight pressure of one finger on its trigger.

DESCRIPTION OF THE PRIOR ART

Heretofore a number of bowstring pull and trigger release mechanisms have been designed, fabricated and utilized by archers to assist them in pulling and holding the bowstring of a conventional bow in tensioned or taut relationship thereto with triggering means for releasing the bowstring to impel an arrow in a forward direction.

Side pressure and consequent twisting are characteristic of the bowstring when suddenly released and allowed to return to its normal untensioned position in the bow during the projecting of the arrow in a forward direction. Arrows projected thus do not travel in the direction intended due to this characteristic, thus causing inaccurate aim in the aim and trajectory of the arrow.

A new and improved bowstring draw and trigger release mechanism is provided which is light in weight, extremely simple in design and inexpensive to manufacture. This new device, when used in association with the bowstring of any conventional bow and arrow equipment, has the capability and necessary provisions for assisting the archer in the function of drawing the bowstring taut and subsequently releasing the same upon the touch of a trigger. The arrow is projected from the tensed bowstring without any possible undesirable side pressures or twisting of the bowstring that could affect the accurate line of projection of the arrow from the bowstring.

SUMMARY OF THE INVENTION

It is therefore one object of this invention to provide an improved lightweight, easily manipulated, inexpensive bowstring draw and trigger release mechanism for archers for use with a bow.

Another object of this invention is to provide an improved bowstring draw and trigger release mechanism comprising a minimum number of easily replaceable components which may be utilized by novice or experienced archer to assist in drawing the bowstring taut, holding the same and releasing the tension on said bowstring to project the arrow therefrom when desired in a predetermined direction by the simple expedient of a light touch of one finger on an accessible trigger component of the device.

A further object of this invention is to provide an improved bowstring draw and trigger release mechanism that can be utilized by either right or left handed archers by merely reversing the horizontal relationship of the gripping handle portion of the device so that the finger gripping cut-outs in the handle and the trigger and bowstring holding components of the device are on the opposite side of the bowstring.

Further objects and advantages of the invention will become apparent as the following description proceeds and the features of novelty which characterize this invention will be pointed out with particularity in the claims annexed to and forming a part of this specification.

BRIEF DESCRIPTION OF THE DRAWINGS

The present invention may be more readily described by reference to the accompanying drawing, in which:

FIG. 1 is a perspective view showing an archer utilizing the bowstring draw and trigger release mechanism of this invention in association with a conventional bow and arrow in ready position to release the taut bowstring and start the arrow on its forward flight.

FIG. 2 is a perspective view of the device illustrating the relationship of the assembled components relative to their association with the drawstring when in tensioned or taut relationship as shown in full lines and in released relationship as indicated in dash lines.

FIG. 3 is a sectional view taken along the line 3—3 of FIG. 2 showing the bowstring holding and releasing components of the device in full line in their holding or locked relationship to the bowstring and in dash lines in their released position.

FIG. 4 is a side elevational view of the assembled device shown in FIGS. 2 and 3 illustrating the normal position of the device in relationship to the bowstring when being used by a right handed archer.

FIG. 5 is a perspective view showing an archer's hand on a trigger release of a modification of the bowstring draw and trigger release mechanism shown in FIGS. 1—4.

FIG. 6 is an enlarged perspective view of the bowstring draw and trigger release mechanism shown in FIG. 5.

FIG. 7 is an enlarged perspective view of a slight modification of the bowstring draw and trigger release mechanism shown in FIGS. 5 and 6.

FIG. 8 is an exploded view of the trigger release portion of the mechanism shown in FIGS. 5—7.

DESCRIPTION OF THE PREFERRED EMBODIMENT

Referring more particularly to the drawings by characters of reference, FIGS. 1—4 illustrate a bowstring draw and trigger release mechanism or device comprising a finger gripping handle 11 and a body portion 12. The body portion 12 is inserted in a flat-bottomed slot or cut-out 13 formed in the handle and rigidly secured thereto in a perpendicular relationship by a machine screw 14.

The handle 11, preferably cylindrical in shape and formed or fabricated of high impact strength plastic, is provided with a smooth, rounded finger gripping notch 15 and 16. These notches are located adjacent each other thereof with their transverse centers facing forwardly in horizontal alignment with sides 17 and 18 of the forwardly projecting body portion 12 of the device, as clearly illustrated in FIGS. 2 and 3.
Body portion 12 of the device is preferably square in cross-sectional configuration and fabricated of a suitable metal such as stainless steel which also may be used to fabricate the trigger member 19 and latch or holding member 20 to provide long life and smooth operating components. The body portion 12 also comprises flat sides 21 and 22 which form its top or bottom and inner and outer end portions 23 and 24.

It should be noted that when the bowstring draw and trigger release device of this invention is used by a right handed archer, the finger gripping handle 11 is being held in a horizontal position with the archer’s forefinger in notch 15 and his third finger in notch 16. The body portion 12 of the device projects forwardly of the archer with side 17 of the body portion the left side of the device and side 18 its right side. Side 21 is the top side and side 22 the bottom, as shown in FIG. 1. If the device is used by a left handed archer with the finger gripping handle 11 held by the fingers of his left hand, the respective positions of the sides, top and bottom portions of the body portion would be reversed from that described above without affecting the function of the trigger release mechanism in any way.

The body portion 12 is provided with a milled, flatsided, elongated slot or cavity 25, having a slightly tapered flat rear end 26 and a tapered flat front end 27 which join with the smooth finished sides to form a cavity. The cavity is of greater length on side 17 of the body portion 12 than it is on side 18. The slightly tapered flat rear end 26 of the slot is provided adjacent side 18 of the body portion with a circular bore 28, the axis of which is perpendicular to the slightly tapered rear end 26 into which it opens. This bore is adapted to receive and contain a replaceable compression spring 29, the function of which will be explained.

Trigger member 19 and latch or holding member 20 are mounted in the slot or cavity 25 formed in body portion 12 in juxtaposition and pivoted relationship to each other by removable bearing pins 30 and 31, respectively. The trigger member and holding member are journaled on the pins so as to move radially in an arc in longitudinal alignment and contact with each other, which movement is limited by the contact of their respective rear and front edges 32 and 33 with the tapered flat rear end 26 of the cavity 25 and the edge of the tapered flat end 27 of the same.

The trigger member 19 is formed with the usual finger gripping portion 34 which extends outwardly from cavity 25 on side 18 of body portion 12. An integral narrow projecting portion 35 of trigger member 19 extends nearly to the outlet of cavity 25 on side 17 of the body portion where its rear edge engages the surface of the flat rear end 26 of cavity 25. The surface provides a stop for the trigger in its counterclockwise rotation by the pressure of compression spring 29 on its rear edge 32. This spring pressure tends to return the trigger to its normal or cocked position as shown in solid lines in FIG. 3.

Trigger member 19 is also provided with an integral forwardly projecting portion 36 having a flat angular front edge 37 and arcuate side edges that join the front edges of the finger gripping portion 34 and the narrow projecting portion 35 of the trigger to form the contour of said member.

The latch or holding member 20 is preferably fabricated of stainless steel of the same thickness and material as trigger member 19 and is substantially rectangul-
The pressure so exerted on the finger gripping portion 34 of the trigger member 19 causes the trigger member to be rotated in a clockwise direction against the resisting pressure of the compression spring 28, thereby causing the angular front edge 37 of the forwardly projecting portion 36 of the trigger to be released from the mating angular edge of the hook-like curved end portion 39 of the pivoted latch or holding member 20. This action causes member 20 to rotate in a clockwise direction about its pivot against the rear edge of the outwardly projecting portion 38 of the latch and holding member 20 by the forward pull exerted on loop 41. The curved end portion 39 of member 20 rides up on the arcuate curved portion of the trigger member 19 and its other end 38 assumes an inclined angular position (as indicated by dash line in FIG. 3) which is sufficient to allow loop 41 of the smooth-surfaced flexible cord 40 to escape from the edge of the projecting end portion 38 of the latch or holding member 20 that has been holding the same to prevent unintentional release of the tensioned bowstring 46.

When the loop 41 of the cord 40 is released as described above, the pull of the bowstring on the surrounding portion of the loop of the smooth-surfaced, flexible cord 40 causes the same to fly forward and away from the swiftly moving bowstring to thereby minimize any possible interference by friction or otherwise that could affect the true forward path of the bowstring 46 and hence the arrow 48.

After releasing the arrow by the subsequent release of the tensioned bowstring, the trigger member 19 and the latch or holding member 20 are quickly and easily returned to their associated cocked and locked relationship ready for use again by the simple expedient of pushing the exposed projecting end 38 of the latch member 20 in a counterclockwise direction, causing the curved end portion 39 of the latch to ride down on the arcuate curved contour of the trigger member 19. This action causes spring 29 to be compressed and the angular tip end of latch member 20 to assume its previous mating locked relationship with the angular front edge 37 of the forwardly projecting portion 36 of the trigger member 19.

It should be noted that all the components of the complete assembled bowstring drawing and trigger release mechanism 10 of this invention may be quickly removed and replaced if they should become damaged or worn.

FIGS. 5-8 illustrate a modification of the bowstring drawing and trigger release mechanism shown in FIGS. 1-4 wherein the bowstring drawing and trigger release mechanism 50 comprises a finger gripping trigger mechanism 51 pivotally mounted in a body portion 52. The body portion is fastened to a hand supporting or indexing shield 53 which is loosely secured to the body portion 52 by a suitable cord 54. Cord 54 is fixedly attached to the body portion 52 by an eye bolt 55, shown in FIG. 8, which is threaded into an aperture 56 in body portion 52.

As shown in FIG. 8, the body portion 52 comprises sections 52A and 52B spaced apart in parallel relationship by section 52C and held together by screws 56, only one of which is shown in FIG. 8. As described in FIGS. 1-4, body portion 52 is preferably square in cross-sectional configuration and fabricated of a suitable metal such as stainless steel which as in FIGS. 1-4 may be used to fabricate the trigger mechanism 51 and latch or holding member 57.

FIGS. 7 and 8 illustrate a cavity 58 formed between the sections 52A and 52B of body portion 52 within which the trigger mechanism 51 and the latch or holding member 57 are pivotally mounted as shown. A pair of stops 59A and 59B are shown in FIG. 8 to provide limits on the movement of holding member 57.

In order for latch or holding member 57 to grip the bowstring 46, the ends of sections 52A and 52B of body portion 52 of the bowstring drawing and trigger release mechanism 50 are each provided with a U-shaped slot 60. Slots 60 provide passageways for the bowstring 46 to be positioned behind the latch or holding member 57 when the holding member is released by trigger mechanism 51 and trigger mechanism is rotated counterclockwise from the position shown in FIG. 8 and holding member 57 is also rotated counterclockwise from its position shown in FIG. 8. At this time, the passageway formed by U-shaped slot 60 is open, i.e. not covered by holding member 57 as shown in FIG. 8. It should be noted that this is the position that trigger mechanism 51 and holding member 57 would be in after a triggering releasing action of the mechanism.

FIG. 6 illustrates that a cylindrical tubing 62 may be placed over the cord 54 to provide a firm but pliable hand hold and support for the archer's hand 63 as shown in FIG. 5. The archer knots cord 54 at a suitable point so that shield 53 is positioned at a comfortable spot a suitable distance from the body portion 52 so that the trigger finger of hand 63 of the archer may satisfactorily grip trigger mechanism 51.

If the detached feeling of shield 53 from the body portion of the bowstring drawing and trigger mechanism is not desired, a finger gripping handle 65 may be fastened to the body portion of the mechanism as shown in FIGS. 7 and 8. The finger gripping handle 65 is rigidly secured to the body portion 52 in a perpendicular relationship by a machine screw 66 threaded into aperture 56 formed in section 52C of body portion 52.

Thus, modifications of the bowstring drawing and trigger release mechanism are shown which operates in a manner to provide the benefits and results of the structure shown in FIGS. 1-4 and described above except the cord 40 of FIGS. 1-4 is removed and the bowstring is held in slot 60 behind the holding member 57 during a tensing thereof.

Although a few embodiments of the invention have been shown and described, it will be apparent to those skilled in the art that various changes and modifications may be made therein without departing from the spirit of the invention or from the scope of the appended claims.

What is claimed is:
1. A bowstring holding and release device comprising in combination:
   a handle member adapted to be gripped by the human hand,
   holding and release means mounted on said handle for releasably engaging a bowstring,
   said holding and release means comprising a pivotally mounted holding member for movement between first and second positions for holding and releasing the string respectively,
   trigger means engaging a first end portion of said holding member to retain said holding member in
7 said first position when said trigger means is in a first pivoted position, said trigger means being pivotable to a second position out of engagement with said portion to permit said holding member to pivot to its second position for releasing the string, said holding member when manually moved to said first position being engaged by said trigger means, locking means for selectively holding said trigger means in said first pivoted position for retaining said holding member in said first position, said locking means including biasing means for automatically rotating the triggering means back to its locking position after pivoting of said trigger means from said first position to said second position, and flexible cord means connected to said holding and release means and looped around the bowstring and over a second end portion of said holding member, whereby said locking means holds said holding member and said cord means around said second end portion of said holding member when said trigger means is in said first position and said bowstring is tensed, and when said trigger means moves to said second position said cord means slips off of said second end portion of said holding member and from around the bowstring as the bowstring moves to its released position.

2. The bowstring holding and release device set forth in claim 1 wherein: said one end of said flexible cord means is detachably connected to said holding and release means at one end thereof.

3. The bowstring holding and release device set forth in claim 2 wherein: said holding and release means is provided with a cylindrically shaped opening into which one end of said cord means is inserted, and means for detachably holding said one end of said cord means in said opening.

4. The bowstring holding and release device set forth in claim 1 wherein: said cord means comprises a piece of flexible material, the two ends of which are connected to said housing and an intermediate portion thereof looped partially around the bowstring and over the second end portion of said holding member.

5. The bowstring holding and release device set forth in claim 1 wherein: said cord means comprises a nylon cord.

6. The bowstring holding and release device set forth in claim 1 wherein: said cord means holds the bowstring free of physical contact with said holding and release means when the bowstring is tensed.

7. The bowstring holding and release device set forth in claim 1 wherein: said handle member is fixedly attached to one end of said holding and release member, and said cord means is fixedly attached to the other end of said holding and release member.

8. The bowstring holding and release device set forth in claim 7 wherein: said holding and release means defines a cavity with its opening extending from two opposite sides thereof, said holding member and said trigger means being pivotally mounted within said opening with said second end portion of said holding member extending out of said cavity on one side of said holding and release means and said trigger means extending out of said cavity from the opposite side of said holding and release means.

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