

June 30, 1970

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3,517,657

ELASTIC TYPE PROJECTILE PROJECTING DEVICE

Filed May 20, 1968

3 Sheets-Sheet 1

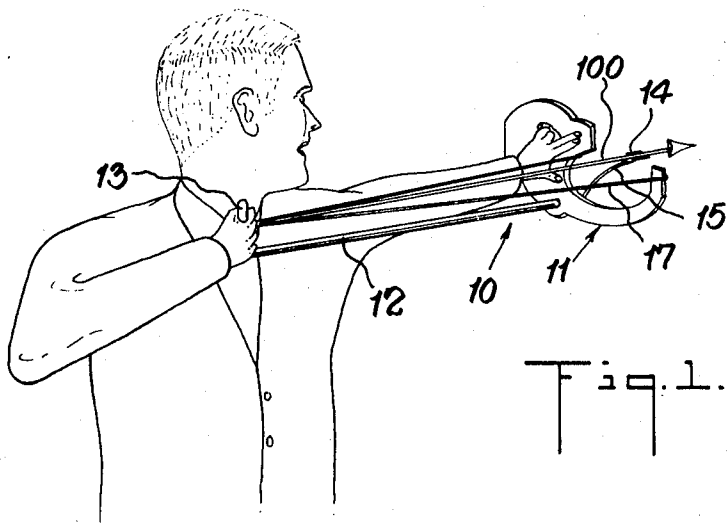


Fig. 1.

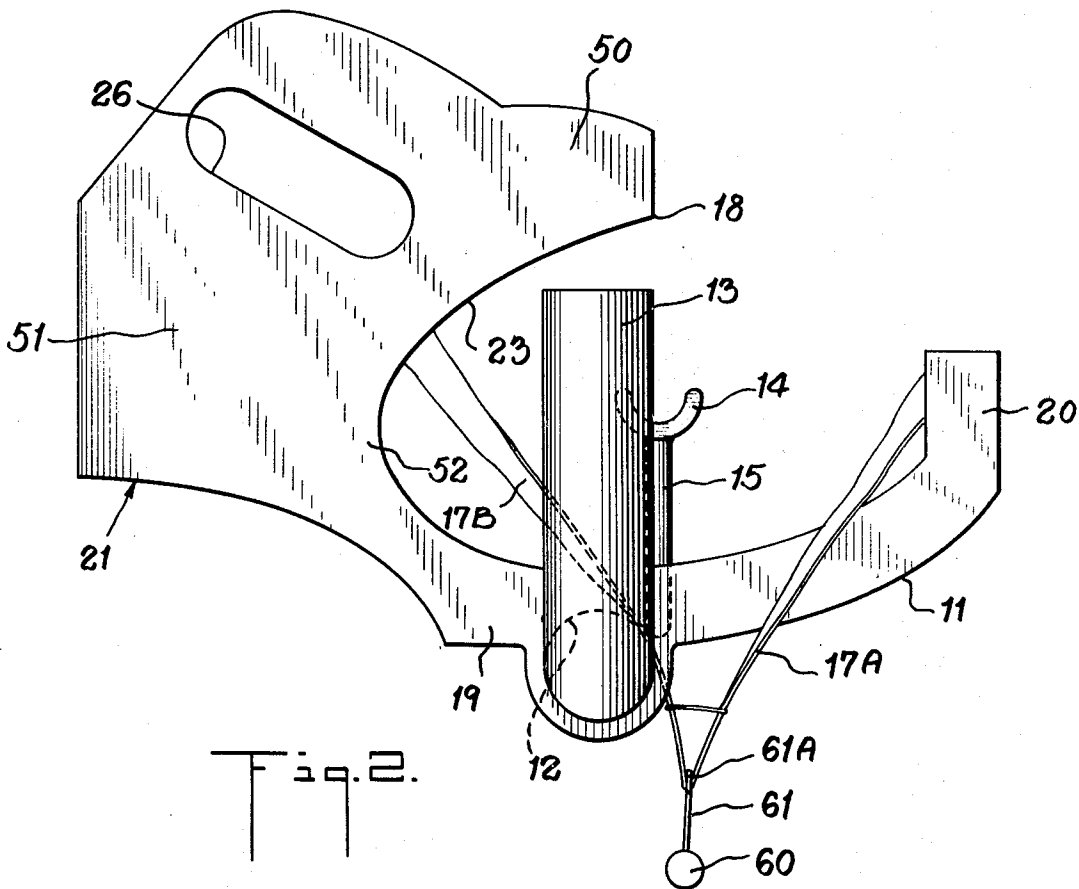


Fig. 2.

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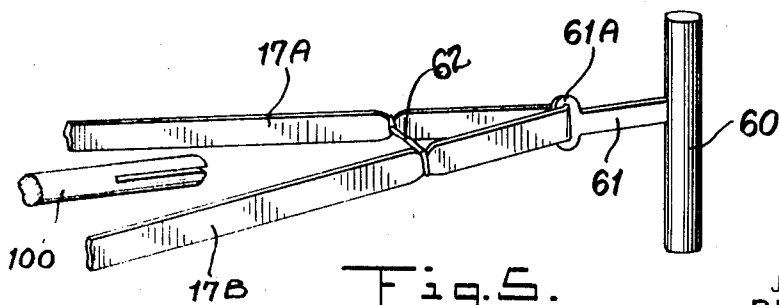
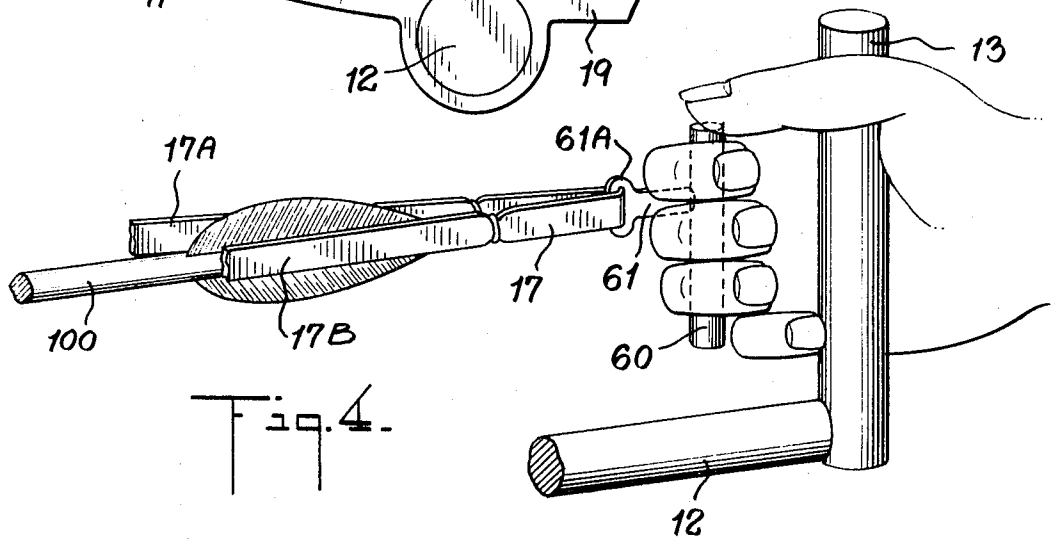
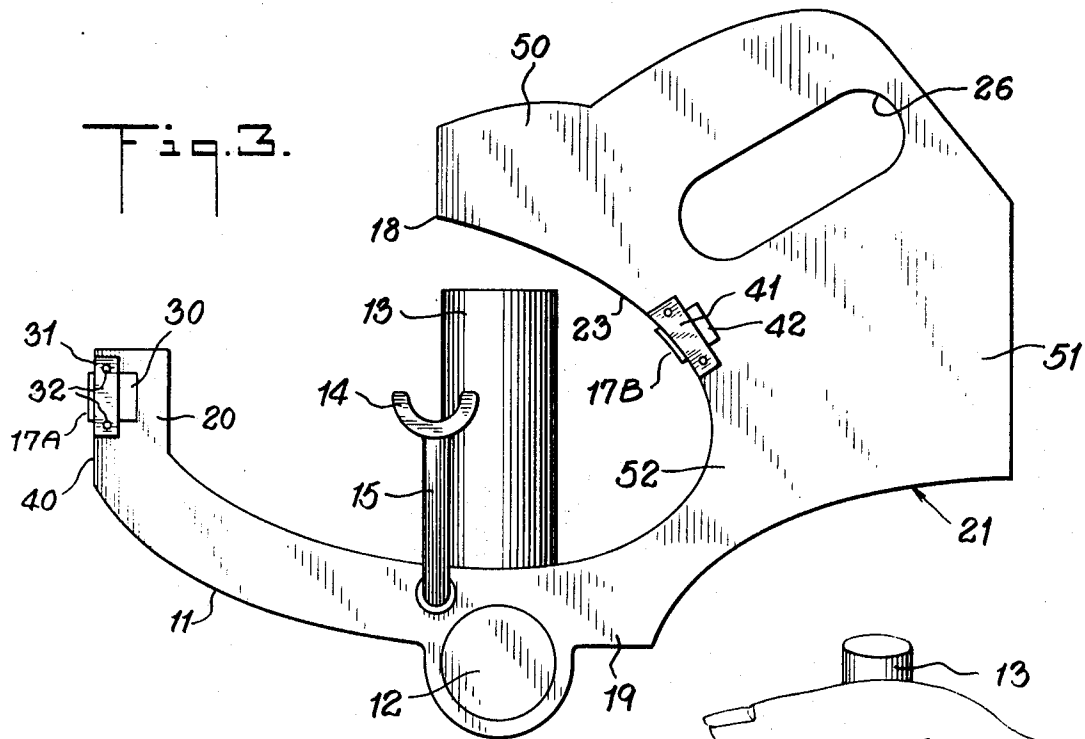
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ELASTIC TYPE PROJECTILE PROJECTING DEVICE

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3 Sheets-Sheet 2



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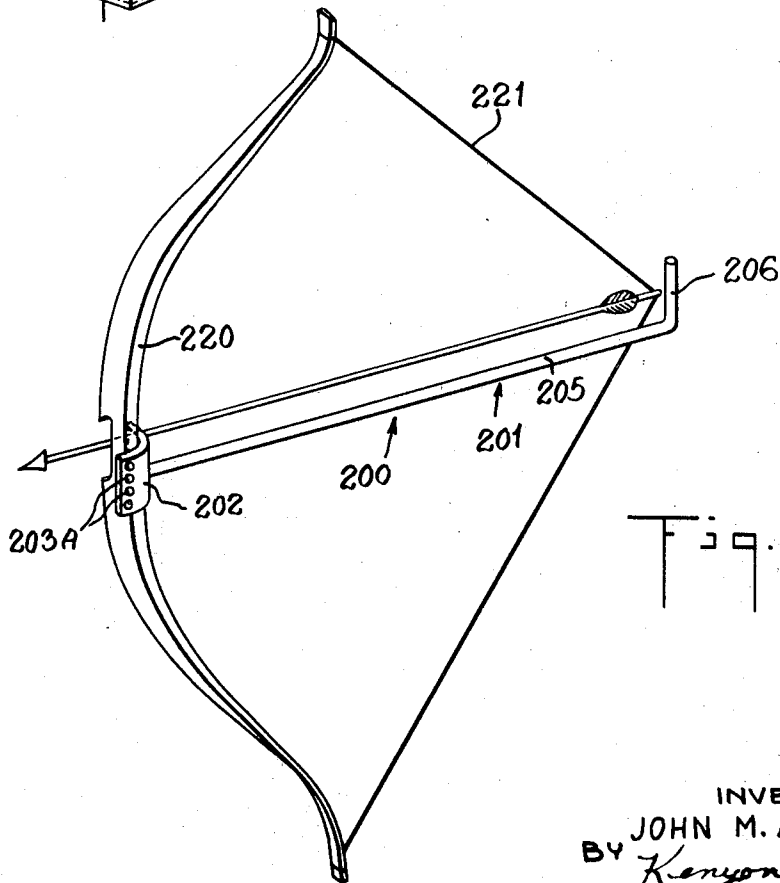
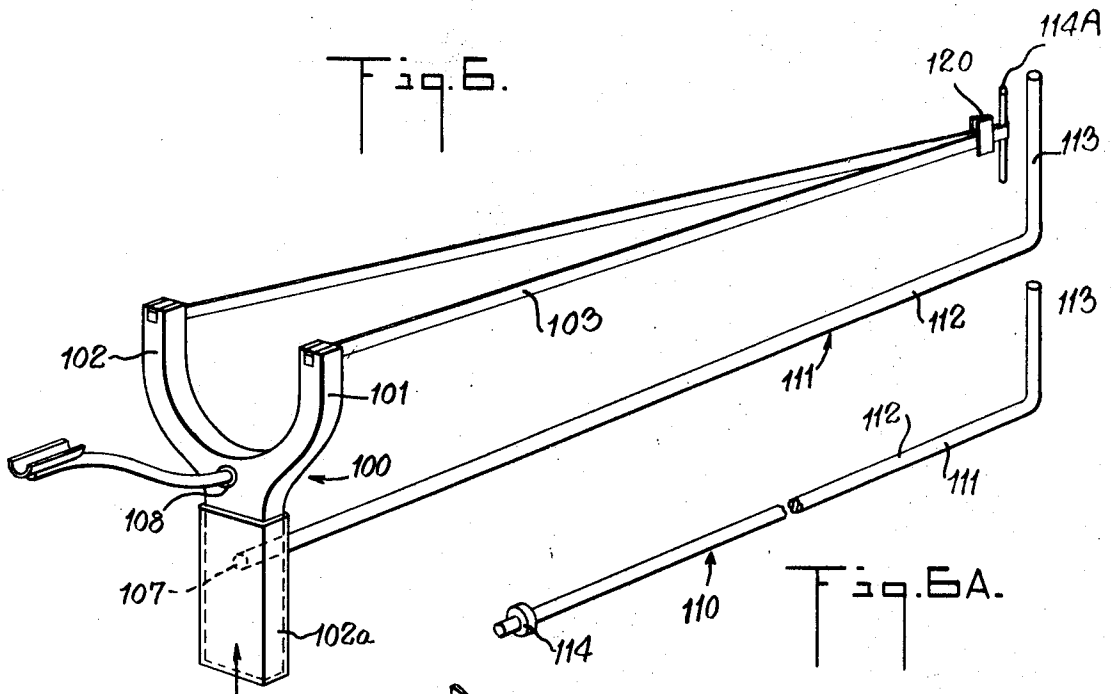
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ELASTIC TYPE PROJECTILE PROJECTING DEVICE

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3 Sheets-Sheet 3



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3,517,657
**ELASTIC TYPE PROJECTILE PROJECTING
DEVICE**

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4 Claims

ABSTRACT OF THE DISCLOSURE

Apparatus for firing conventional arrows including a firing head with a rigid rod attached to one side of the firing head and a support stub projecting from the free end of the rigid rod. The firing head is an open member to which elastic firing means are fastened. Attached to the opposite side of the firing head from the rigid rod is an arrow guide. An arrow to be fired is placed through the firing head and supported by the arrow guide. The notch in the arrow receives the elastic firing means which are stretched to hold the arrow in a cocked position. The elastic firing means are held stretched by a person who is firing the arrow holding the elastic firing means in one hand and bracing that hand against the support stub. The other arm of the person is extended and grips the firing head to aim the arrow. The arrow is fired when the hand that holds the elastic firing means and the arrow therewith adjacent the firing stub releases the elastic firing means. Also disclosed is apparatus that can be attached to weapons such as longbows, slingshots and other catapulting devices, to enable those devices to be fired by a person using an extended arm to aim the projectile, the extended arm applying no force to the device to hold it in a cocked position. Simultaneously, while the extended arm aims the weapon the hand of other arm of the person firing the weapon is holding the weapon in a cocked position.

This invention relates to apparatus for firing projectiles such as arrows, BB's, etc. and in particular for apparatus that does not require a person who is firing the projectiles to use great force while holding a projectile in a cocked position while aiming the apparatus preparatory to firing.

Recently there has been a great upsurge in the use of elastically projected arrows for hunting. This has been due in part to the lengthy hunting season most states provide for those who hunt with elastically projected arrows. Similarly, a great many people prefer hunting with elastically projected arrows because to successfully hunt with this type of weapon a greater amount of skill is required than with a rifle or pistol.

One of the major problems encountered with conventional bows in accurately firing an arrow is that of holding the bow steady while aiming the arrow when the arrow is in a cocked condition preparatory to firing. In holding the arrow in a cocked condition while aiming the arrow with conventional bows it was necessary for the archer to exert great force to hold the bow in a flexed position. Generally, this required the archer to rigidly lock an extended arm under a substantial force and use the hand of the other arm to hold the notched end of the arrow in the bow-string. In firing this type of bow and

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arrow the archer would use his extended arm to aim the arrow. However, a high degree of accuracy was difficult to obtain since it is extremely hard to hold the extended aiming arm steady while it was being used to hold the bow flexed while the arrow is in a cocked position. Usually there was a slight quiver in the extended arm of the archer due to the force exerted against the flexed bow while the arrow is in its cocked position. This quiver severely limited the accuracy of the archer firing the arrow. Additionally some bows are so heavy that the person using the bow could not hold the arrow in a cocked position for a sufficient period of time to aim the arrow.

The well-known crossbow provides the solution to some of the above-mentioned problems, but comes afoul of some State regulations which do not allow hunting with a bow and arrow where mechanical locking means are used to hold the arrow in a cocked condition.

Similarly, slingshots are difficult to accurately fire because the person who is firing the slingshot must aim the slingshot with an extended arm which is under pressure from holding the elastic firing means under tension. The extended arm of the person firing the slingshot will quiver slightly from the force necessary to hold the elastic firing means under tension making accurate aiming difficult.

It is therefore an object of the present invention to provide apparatus that can accurately fire projectiles.

A further object of the present invention is to provide apparatus that can accurately fire conventional arrows without requiring the person firing the arrows to exert a great deal of force in the arm that is used to aim the arrow.

Another object of the present invention is to provide apparatus for firing arrows that does not require the aiming arm of the person firing the arrow to exert great force to hold the arrow in a cocked position and yet does not violate the hunting regulations of those states which forbid the arrow to be held in a cocked position by mechanical locking means.

Still another object of the present invention is to provide apparatus which can fire projectiles that is easy to make, simple to use and economical in manufacture.

Briefly, in accordance with one aspect of the present invention, the foregoing and other objects are accomplished by apparatus for firing arrows which includes a rigid rod with a firing stub attached to one side of a firing head. The firing head is a member through which the arrow to be fired projects preparatory to its being fired and to which elastic firing means are fastened. Attached to the opposite side of the firing head that the rigid rod is on is an arrow guide. When it is desired to fire an arrow, the arrow is placed through the firing head and supported by the arrow guide. The notch of the arrow receives a notch string held by the elastic firing means which can be stretched to hold the arrow in a cocked position. The person firing the arrow maintains the elastic firing means in a stretched condition by holding the elastic firing means in the one hand and bracing that hand against the firing stub. The other arm of the person is extended and grips the firing head to aim the arrow which is fired when the hand that holds the elastic firing means under tension adjacent the firing stub releases the firing means and the arrow therewith.

In another aspect of the present invention means are provided that can be attached to a weapon such as a slingshot, or conventional longbow or other catapulting weapons to allow the weapon to be fired without the person who is firing the weapon having to use an extended arm which is used to aim the weapon to hold the firing means of the weapon under tension preparatory to its being fired.

Other objects and aspects of the present invention will become apparent from the following specification and drawings in which:

FIG. 1 is an illustration of an embodiment of the present invention held by a person preparatory to firing an arrow;

FIG. 2 is a rear elevational view of the embodiment of the invention shown in FIG. 1;

FIG. 3 is a front elevational view of the embodiment of the invention shown in FIG. 1 with the elastic firing means therefor;

FIG. 4 is an enlarged view of the firing release means of the embodiment of the invention shown in FIGS. 1-3;

FIG. 5 is an enlarged view of the notched portion of arrow to be fired and the release means of the present invention;

FIGS. 6 and 6A illustrate a second embodiment of the invention; and

FIG. 7 illustrates a third embodiment of the invention.

Referring now to the drawings and more particularly to FIG. 1 wherein a weapon 10 in accordance with the present invention is seen to include a flat firing head 11 having a rigid firing rod 12 extending therefrom on one side. Firing rod 12 can be attached to support head 11 by any of the conventional means available to the skilled mechanic. Attached or made integral with rod 12 on the opposite end from firing head 11 is a firing stub 13. Stub 13 is approximately perpendicular to rod 12 and generally parallel to firing head 11. An arrow guide 14 is attached to the opposite side of firing head 11 as rod 12 by an arm 15. The distance from stub 13 to arrow guide 14 is approximately slightly less than the length of the arrow to be fired so that when the arrow is in a cocked position with its tail adjacent stub 13, the shaft of the arrow rests on arrow guide 14 with the arrow head as seen in FIG. 1. Elastic firing means 17 extend from firing head 11 and can be a strip of either rubber, elastic or any other suitable material.

As can be seen in FIG. 2, firing head 11 includes generally open member 18. Member 18 has a generally curved base 19 to which rod 12 and guide arm 15 are attached. Base portion 19 extends to post 20 on the right and on the left, as viewed in FIG. 2, to a flared section 21. Flared section 21 is shaped so that if the archer places his pinky and left index fingers through finger opening 26, as seen in FIG. 1, he can support his middle and right index fingers on part 50 of flared section 21. Similarly with the middle and right index fingers of the archer positioned as just described the palm of the archer will be on part 51 of flared section 21 with the thumb on part 52.

Flared section 21 has an edge 23 on its right side, as viewed in FIG. 2, which is open to allow an arrow to be unobstructedly positioned with one end adjacent stub 13 and the other end adjacent guide 14. Post 20 by being positioned to the right of stub 13 and guide 14 as viewed in FIG. 2 allows the arrow to be unobstructedly positioned as just described. While the firing head is shown as an open member it is obvious that the firing head could be modified to be a closed member with an opening in it. The elastic firing means is attached at one end to post 20 and at the other end to flared section 21.

In FIG. 3 arm 15 can clearly be seen to project from firing head 11 to arrow guide 14. Arrow guide 14 is generally U-shaped and can thus support an arrow shaft while the arrow is being aimed. The means to attach one end of elastic firing means 17 to post 20 is seen to in-

clude a block 30 positioned to have a portion extend past side 40 of post 20. Placed above block 30 so as to have a side adjacent side 40 is a tie 31. Tie 31 is generally rectangular in shape and has its major axis running along the length of post 20. Two screws 32 are screwed through holes in tie 31 on either side of block 30. One end of the elastic firing means is placed between block 30 and the surface of post 20 in contact therewith. By tightening screws 32 block 30 and post 20 are brought closer to each other securely gripping the elastic firing means therebetween. A similar block and tie arrangement is adjacent side 23 of flared section 21 with tie 31 adjacent side 23 and block 42 extending past the side. This arrangement is used to attach the other end of the elastic firing means to flared section 21 adjacent side 23. While I have disclosed a block and tie to fasten the elastic firing means to the different parts of the firing head it is obvious that other means can be used to attach the elastic firing means to the firing head. As can be seen in FIG. 5 the elastic firing means pass through closed loop 61A which is integral or joined to a shank 61, the latter joined to a firing rod 60. Thus with a separate end of the elastic firing means attached to different portions of firing head 11 and with the middle section of the elastic firing means passing through loop 61, the configuration of the elastic firing means can be seen to approximate a V-shape with the apex of the V adjacent rod 60 and with the legs of the V being portions 17A and 17B of the elastic firing means. Tied to the portion of each leg of the elastic firing means adjacent the apex of the V is a notch string 62 as seen in FIG. 5. This string 62 enters the notch in the tail of the arrow to be fired as will later be described.

Any conventional arrow 100 may be fired with the apparatus of the invention disclosed in connection with FIGS. 1-5. The notched end of the arrow 100 is positioned so that string 62 is within the confines of the arrow notch and abutting against the closed end of the notch. The shaft of the arrow 100 (FIG. 1) is rested on guide 14 and the person firing the arrow grasps firing rod 60 with the fingers of one hand, as viewed in FIG. 4, and uses the other hand and arm to support and aim the firing head as viewed in FIG. 1 and as previously described. The person firing the arrow then draws firing rod 60 adjacent to stub 13 pulling the arrow back so the head of the arrow is adjacent guide 14 (FIG. 1) and the elastic firing means are under tension. The person firing the arrow will continue to hold the elastic firing means under tension and the arrow cocked by merely using the fingers and palm of his non-extended arm to hold firing rod 60 adjacent stub 61 (FIG. 4). This hand will be the only hand that exerts force to hold the elastic firing means under tension. Similarly the extended arm will aim the firing head and the arrow with the fingers on the hand of the extended arm as previously described and seen in FIG. 1. As the extended arm is not applying a force to the elastic firing means it will not quiver and it will be able to accurately aim the arrow. When it is desired to fire the arrow the fingers of the hand holding firing rod 60 adjacent stub 13 merely release the firing rod with the elastic firing means rapidly moving towards firing head 11, firing the arrow. Guide 14 insures that the arrow fired will be supported while being aimed and for the initial instant of its flight.

In FIG. 6 it is shown how a conventional slingshot can be modified to incorporate the principles of the present invention. The conventional slingshot is seen to include a firing head 100 having a U-shaped upper portion with posts 101 and 102 to which the respective ends of elastic firing means 103 are attached. The bottom of firing head 100 is defined by a grip member 102A. In order to modify the slingshot to be capable of accurately firing small projectiles such as stones, BB's, etc. in accordance with the present invention, all that is necessary is to drill a hole 107 through grip member 102A to be able to receive the novel firing rod attachment of the present invention. Firing rod attachment 110 (FIG. 6A) is seen to include

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a shaft 111 having a diameter that will allow it to snugly fit in hole 107. Shaft 111 is bent near one end to define a firing stub 113 and an elongated support section 112 approximately perpendicular thereto. A stop 114 is fastened by any of the conventional means about section 112 near the free end of shaft 112 so as not to be capable of movement relative to the shaft. A firing post 114A is fastened to the end of the elastic firing means 103 or can merely be inserted by the person firing the slingshot, as seen in FIG. 6, at the apex of the V-shaped elastic firing means. An arrow guide may be fastened to the slingshot, as will later be described, if it is desired to fire arrows therefrom.

Preparatory to firing the slingshot, firing rod attachment 111 is inserted in hole 107 of slingshot 100 with stop 114 pressed against grip 102A to prevent the firing rod attachment from moving into hole 107 and thus moving relative to slingshot 100 when the slingshot is being aimed. If desired, a pouch 120 and rod or post 114A can be supported by the elastic firing means at the apex of the elastic firing means to hold and release the projectile at firing.

When it is desired to fire a projectile, such as a BB, stone, etc., the projectile is placed in pouch 120 or in the apex of the elastic firing means if a pouch is not used. The elastic firing means are then placed under tension by the person firing the slingshot utilizing a first hand to pull rod 114 adjacent firing stub 113. This hand will serve two functions in firing the slingshot. First, it will allow the person firing the slingshot to extend his second arm and second hand to grasp grip 102A to aim the slingshot without having to utilize this extended aiming arm to exert a force to hold the elastic firing means under tension. The first hand and arm will also hold the elastic firing means under tension as the slingshot is being aimed by grasping rod 114A and holding it adjacent firing stub 113. The hand can also support the projectile being fired in the elastic firing means or pouch so it will not drop therefrom before it is fired. When it is desired to fire the projectile the hand holding rod 114A adjacent firing stub 113 merely releases rod 114A which will then be rapidly pulled by the stretched elastic firing means towards the slingshot firing head firing the projectile therefrom. By not having to use the extended arm which is used to aim the slingshot head to hold the elastic firing means under tension this arm will not quiver when aiming the slingshot and the slingshot will accurately fire the projectile.

If it is desired to fire arrows with a conventional slingshot all that is necessary is to modify the slingshot as done in FIG. 6 and also modify the elastic firing means of the slingshot to include a notch string and a firing rod as shown in FIG. 5. Additionally, it will be desirable to drill a hole 108 in the uppermost part of grip 102 opposite the side from which firing rod attachment 110 projects so an arrow guide may be attached thereto. In firing an arrow with this embodiment of the present invention the same procedure will be used as when firing the apparatus described in FIGS. 1-5.

In FIG. 7 apparatus is shown that will enable a conventional longbow such as depicted by number 220 to fire arrows in accordance with the principles of the present invention. This is accomplished by utilizing a firing rod attachment 200 which consists of a shaft 201 joined to a finger guard 202. Finger guard 202 is curved so as to be able to be placed flush against longbow 220 as seen in FIG. 7 and includes a plurality of finger holes 203A. Shaft 201 is bent to define a rigid portion 205 and a firing stub 206. Preferably, stub 206 will be perpendicular to rigid portion 205.

When it is desired to fire an arrow in accordance with the aspect of the invention disclosed in FIG. 7, finger guard 202 will be positioned as seen in the figure. The person firing the bow will extend one arm and place the fingers of the hand of the extended arm through

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finger holes 203A about bow 220 to hold finger guard 202 and firing rod attachment 200 fast to the middle section of bow 220. Similarly, an arrow will be placed in the bow and supported by the extended arm of the archer with the notched end of the arrow receiving string 221. The person firing the bow will use his other arm to pull the arrow adjacent firing stub 206. The palm of the hand of the arm that pulls the arrow adjacent firing stub 206 will be placed against stub 206 with the fingers of this hand holding the arrow adjacent the stub. This will flex the bow placing the arrow head adjacent the bow in a cocked position. The extended arm of the person firing the bow will aim the arrow and when it is desired to fire the arrow the hand of the unextended arm will release the arrow. This will allow the bow to unflex bringing the bow-string rapidly to a near vertical position and firing the arrow. As all the force necessary to hold the bow flexed while the arrow is in a cocked position will be exerted by the hand of the unextended arm of the person who is firing the bow, it will not be necessary for any force to be exerted in the extended aiming arm of the person firing the arrow to hold the bow in a flexed condition. Since there will be no force in the extended aiming arm in the person firing the arrow this arm will not quiver and thus will be capable of accurately firing an arrow.

From the foregoing description it is also apparent that I have invented a novel apparatus that can be used to fire conventional arrows more accurately than was heretofore possible. Similarly, in using the apparatus of the present invention the archer will not come afoul of State hunting laws which prohibit the use of mechanically locked arrows.

It is also apparent from the foregoing description that I have invented novel firing rod attachments that can be used with longbows, slingshots, and other catapulting devices to enable these devices to accurately fire their respective projectiles without requiring major modifications in these devices.

Having thus described the invention, it is not intended that it be so limited as changes may be readily made therein without departing from the scope of the invention. Accordingly, it is intended that the subject matter described above and shown in the drawings be interpreted as illustrative and not in a limiting sense.

What is claimed is:

1. Apparatus for firing an arrow comprising:

a firing head,
elastic firing means attached to said firing head for firing an arrow,

first means extending perpendicular from said firing head for allowing a person who is firing the apparatus to use the hand of an unextended first arm to hold the elastic firing means under tension preparatory to firing an arrow while using the other arm to hold the firing head to aim the arrow that is to be fired, a stub, said first means including a rod affixed to said firing head, said stub extending from the end of said rod not affixed to said firing head,

firing release means and means attaching said firing release means to said elastic firing means, said firing release means including a release rod, said means attaching said firing release means to said elastic firing means including a shank attached to said rod with said shank also being attached to said elastic firing means.

2. Apparatus according to claim 1 wherein said shank includes a looped portion with said elastic firing means passing through said loop.

3. Apparatus according to claim 1 wherein said firing head is substantially flat and includes a finger hole located in a section thereof, said section being large enough for the person firing the apparatus to place two fingers, a thumb and the palm of a hand against said section.

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4. Apparatus for firing elastically propelled projectiles comprising:

a firing head,

elastic firing means attached to said firing head,
a rod extending perpendicular from the base of said firing head, said rod being of such a length that its rear end does not extend past the front of the person using the apparatus,

a stub, said stub attached to the end of said rod that is not attached to said firing head so as to be perpendicular thereto,

firing release means, said firing release means including at least two openings, a portion of said elastic firing means continuously extending through each of said openings whereby when it is desired to fire a projectile a person may place one arm against the firing head to aim the projectile and pull the firing

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release means to a cocked position with the hand of the other arm by securing the hand of the other arm to the stub attached to the rod.

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