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Williams

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- (54) **DOUBLE CROSSBOW**
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F41B 5/12 (2006.01)
- (52) **U.S. Cl.**
CPC **F41B 5/126** (2013.01); **F41B 5/12** (2013.01)
- (58) **Field of Classification Search**
CPC F41B 5/12; F41B 5/123; F41B 5/126
See application file for complete search history.

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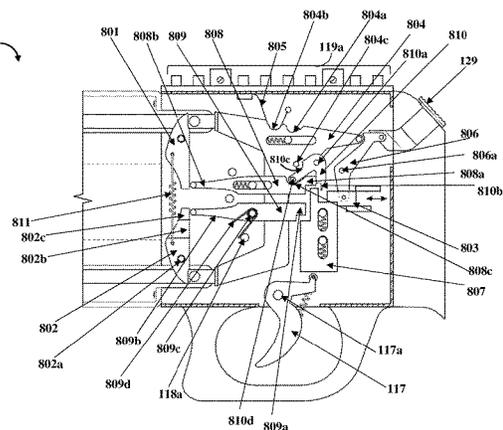
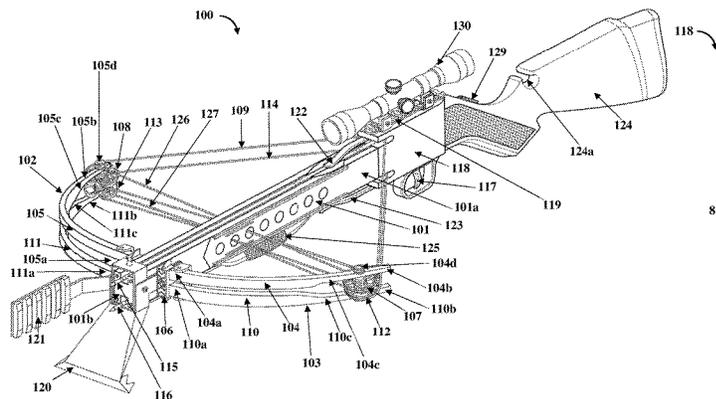
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(57) **ABSTRACT**

A double crossbow with a single trigger mechanism is provided. The double crossbow comprises a barrel, an upper bow, a lower bow, and a single trigger mechanism. The upper bow and the lower bow are positioned on top of each other at a distal end of the barrel. The single trigger mechanism positioned at a proximal end of the barrel is configured to shoot two arrows in succession without reloading an arrow between two shots. A first arrow is shot from the upper bow when a single trigger of the single trigger mechanism is squeezed completely a first time, and the second arrow is shot from the lower bow when the single trigger of the single trigger mechanism is squeezed completely a second time. The single trigger mechanism is configured to not shoot the first arrow and the second arrow simultaneously.

19 Claims, 11 Drawing Sheets



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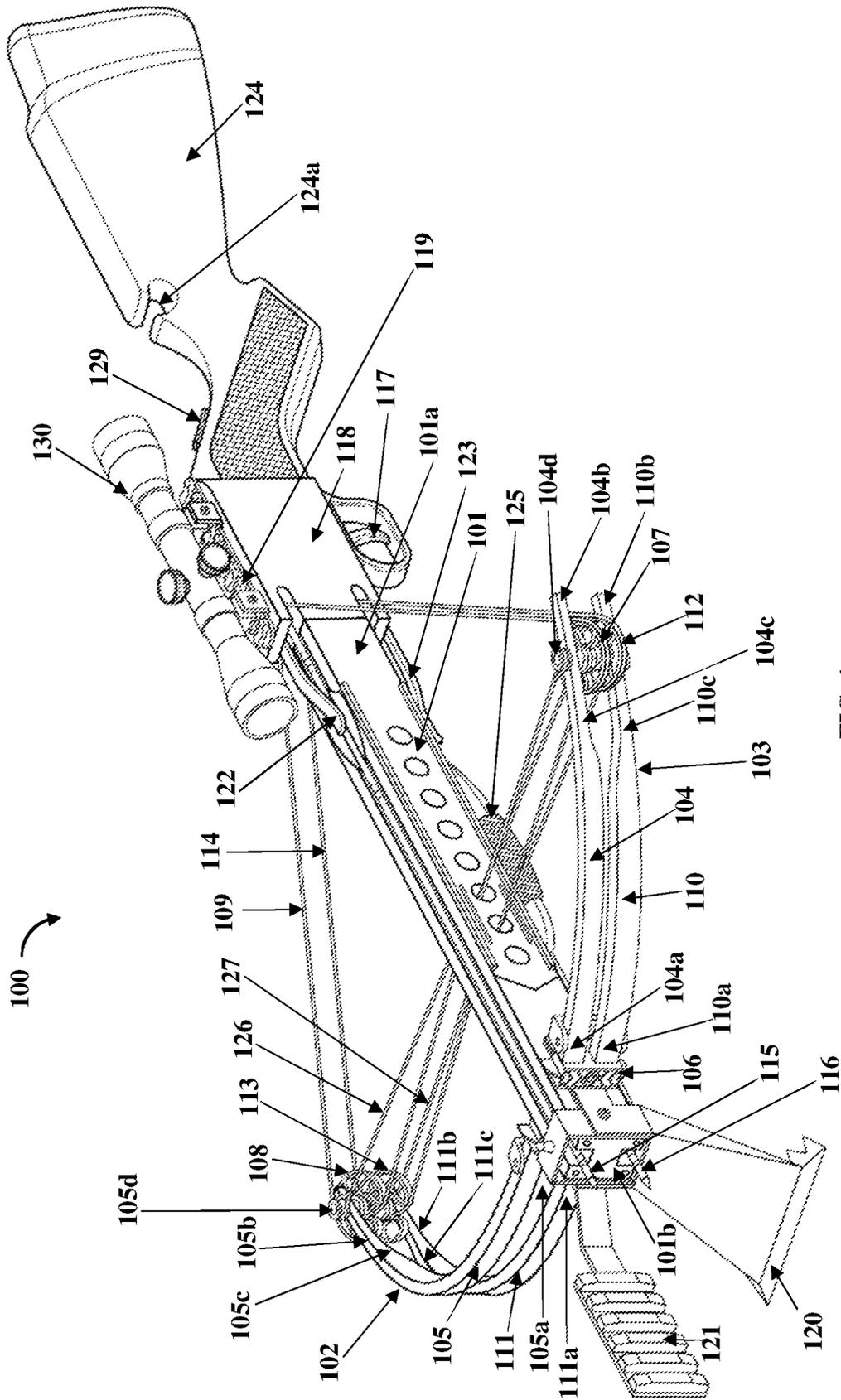


FIG. 1

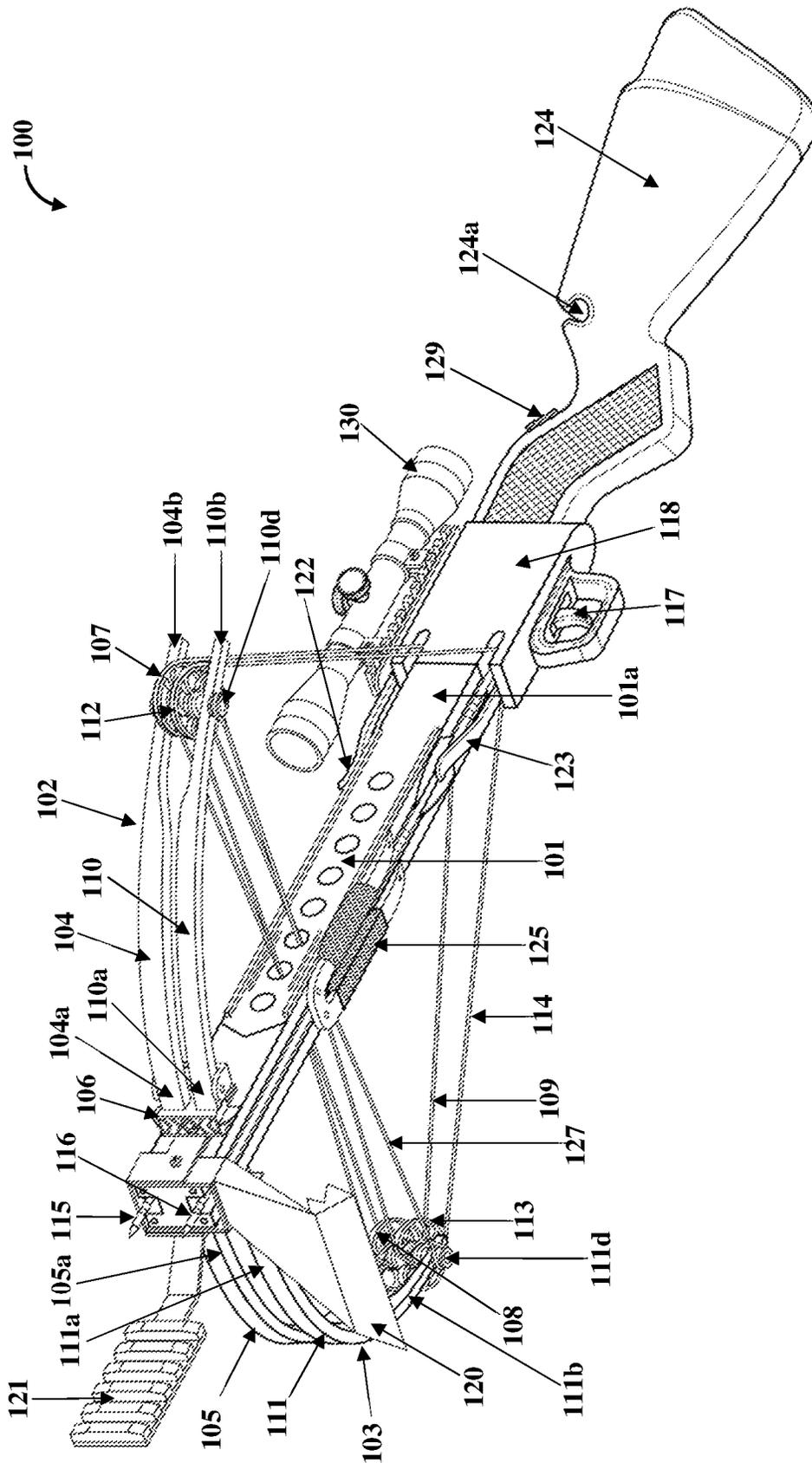


FIG. 3

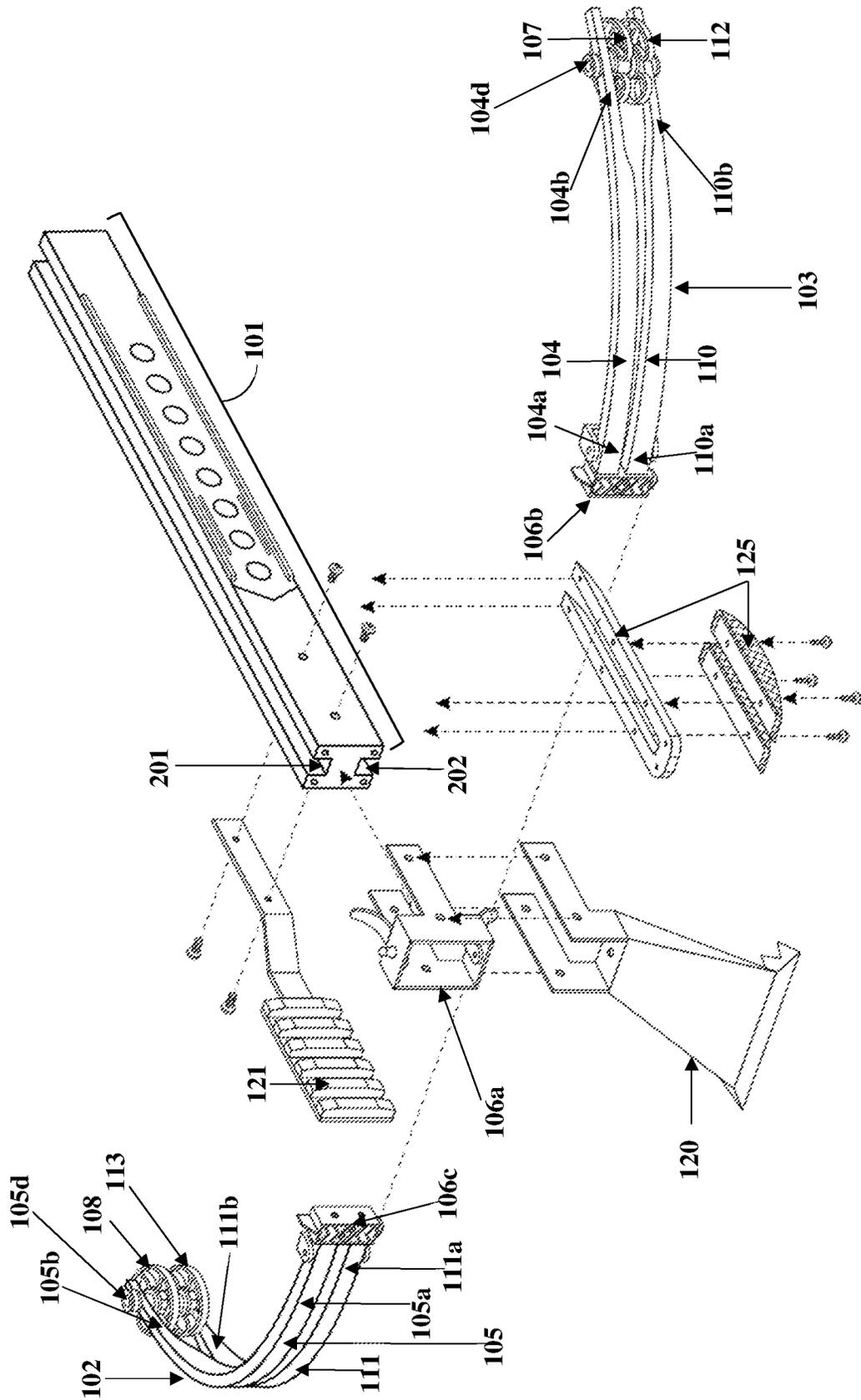


FIG. 4

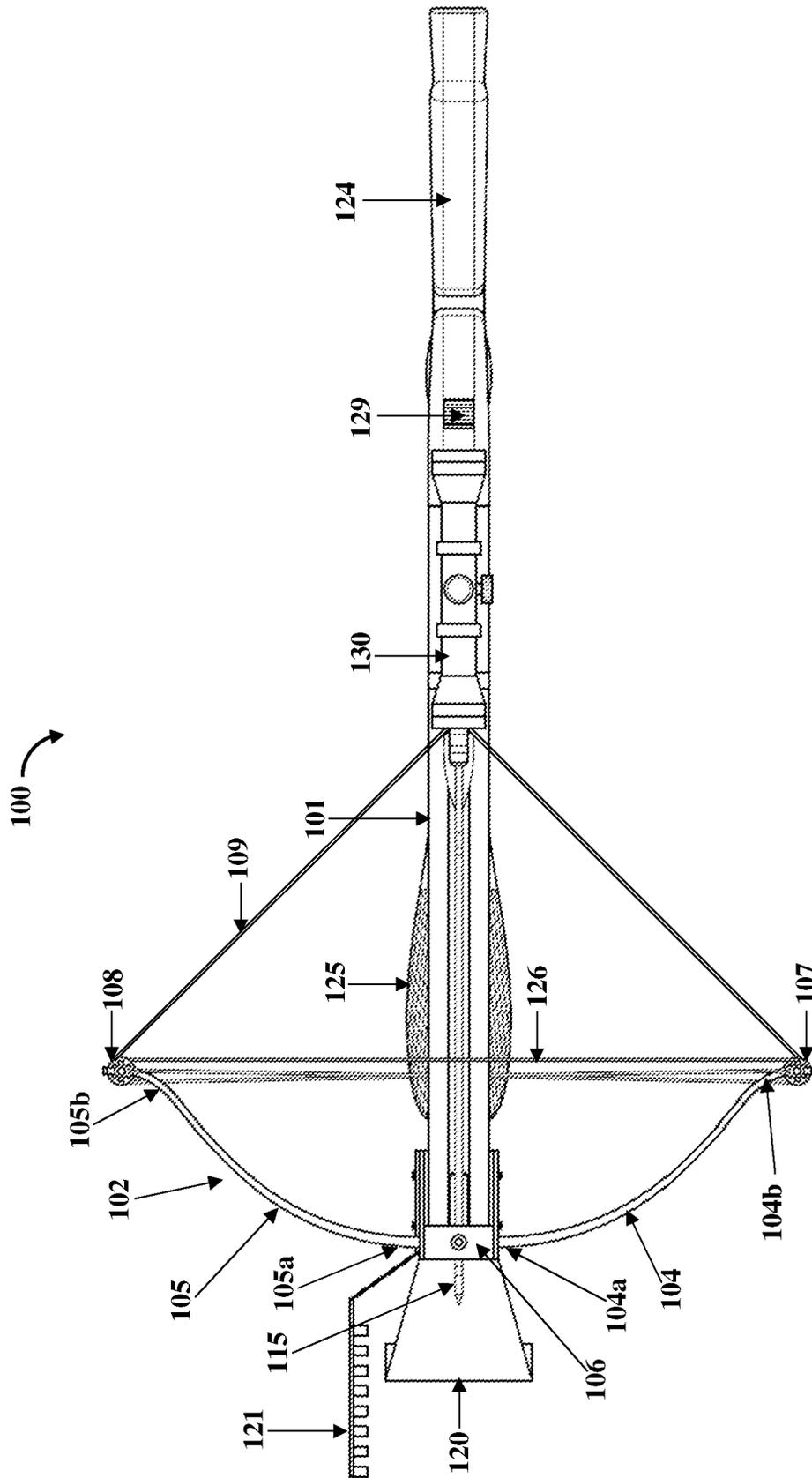


FIG. 7

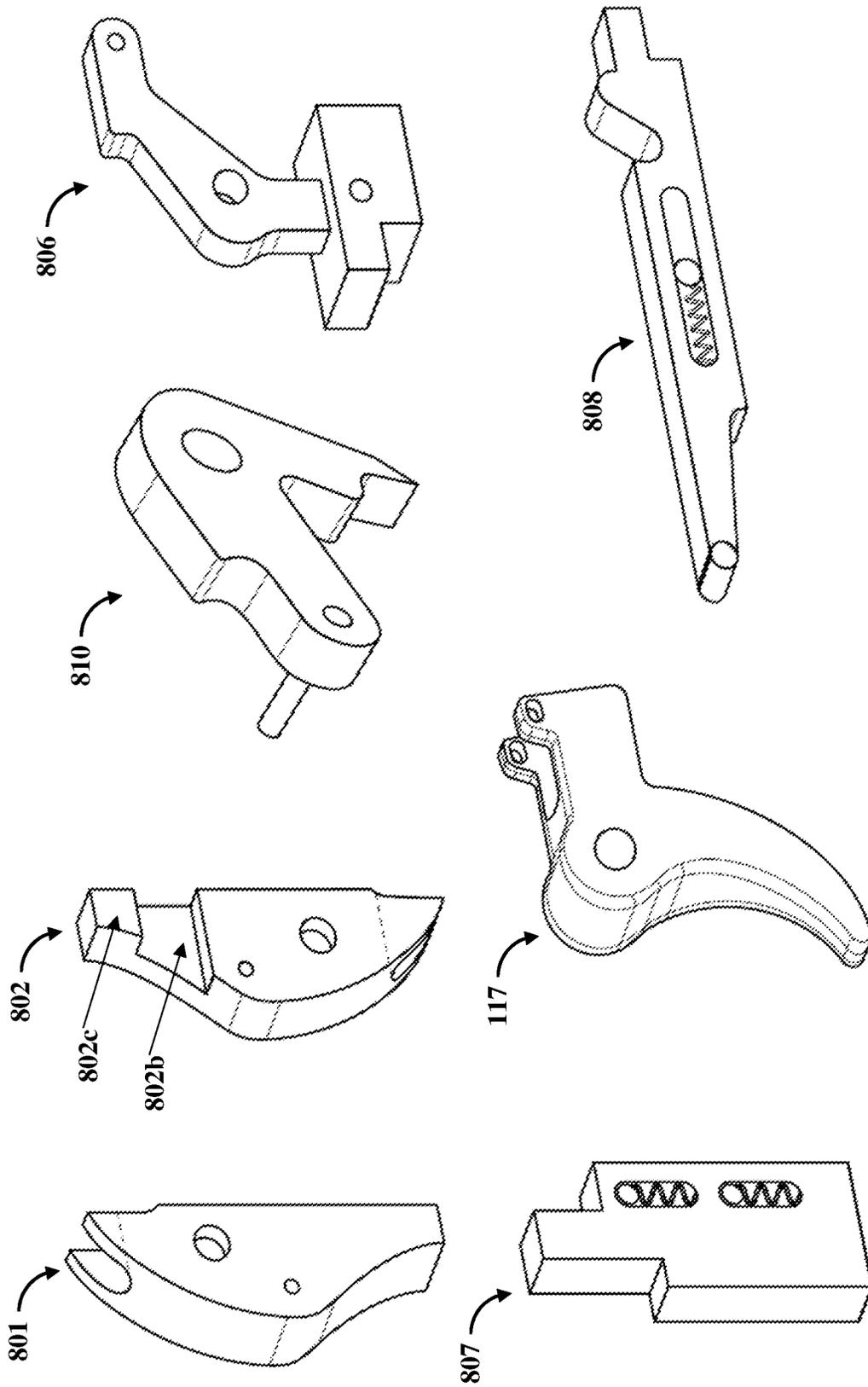


FIG. 9A

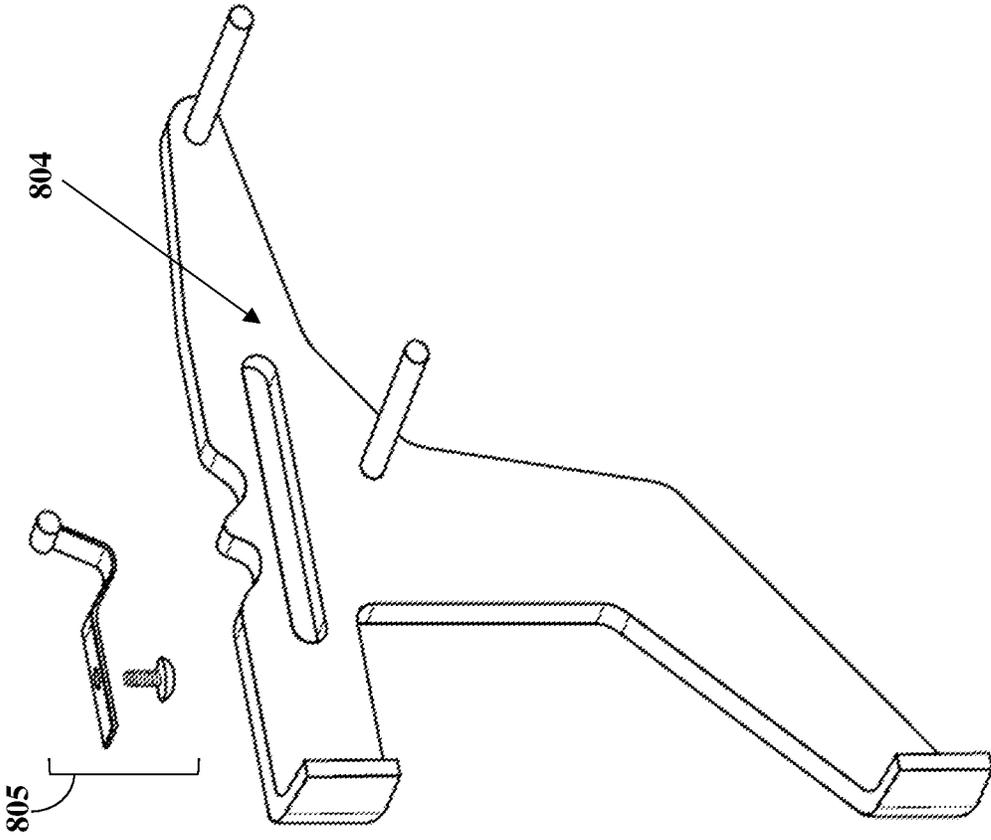
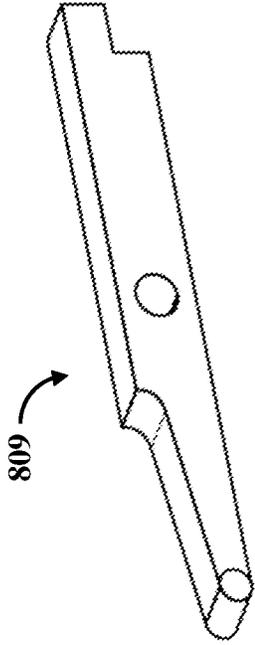


FIG. 9B



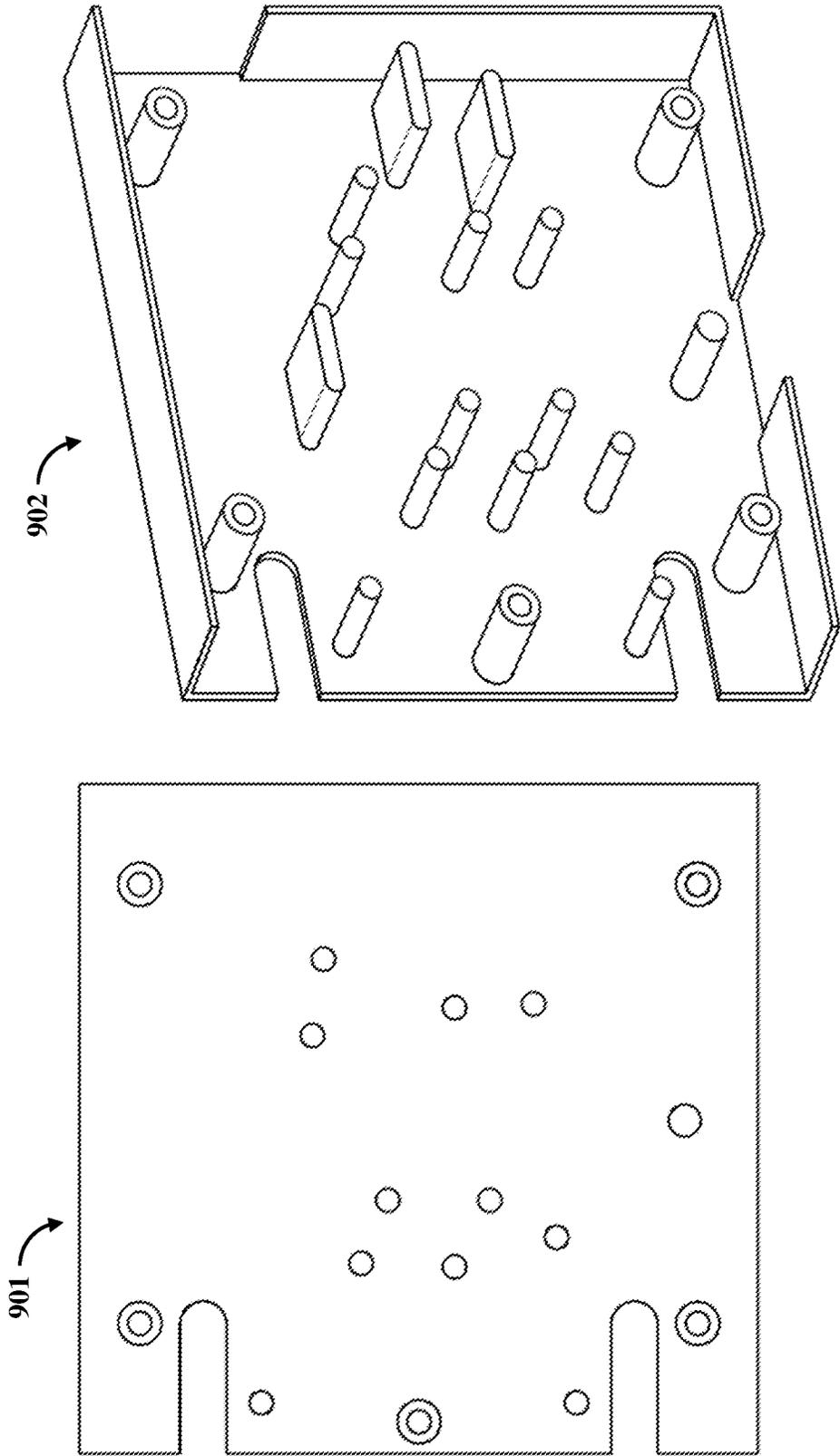


FIG. 9C

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DOUBLE CROSSBOW**CROSS REFERENCE TO RELATED APPLICATIONS**

This application is a continuation in part application of non-provisional patent application Ser. No. 16/602,754, titled "Double Crossbow", filed in the United States Patent and Trademark Office on Dec. 3, 2019.

FIELD OF THE INVENTION

The present invention, in general, relates to a device for firing multiple arrows onto a target without having to reload between the shots, and more particularly, relates to a double crossbow.

BACKGROUND

In many parts of the world, bowhunting is a popular way of hunting and controlling population of animals, for example, deer, duck, etc. In the United States of America, a special archery season is set aside for hunting animals. Typical bowhunting requires people to hunt the animals using a crossbow, or a bow and arrow. Typically, an archer can only shoot a single arrow at a time with the crossbow, or the bow and arrow. Oftentimes, people need to have more than one arrow in the crossbow, ready for shooting the second arrow in quick succession, without having to reload a fresh arrow into the crossbow after the first arrow is shot. Availability of multiple arrows in the crossbow, ready for shooting in quick succession, allows an archer to have a greater chance of killing the animal or not being detected by deer and other animals, which were called into a hunter's firing range or encountered in the normal parameters of hunting.

In general, people who are target shooting or bowhunting, often need to fire subsequent arrows after firing the first arrow, to hit the target or kill the animal or subsequent animals that need to be shot. Traditional crossbows require a second arrow to be selected, fixed in the crossbow and the string drawn. Each of these activities distract the focus of the archer or the hunter away from the target or animal, requiring him or her to do additional work by moving his or her limbs and other body parts. Furthermore, there is a high possibility that the archer or the hunter makes some noise while moving his or her limbs and other body parts, which could alert the animal. In some areas it is possible that one or more dangerous wild animals may arrive in response to a calling by a first animal, indicating the presence of a dead animal or animals, or just by virtue of being in the area. Hence, there is a long felt need for a device that can be loaded with two arrows that are configured to be fired in quick succession, when a safety catch is released and a trigger is pulled on a double cross-bow in a normal way.

SUMMARY OF THE INVENTION

This summary is provided to introduce a selection of concepts in a simplified form that are further disclosed in the detailed description of the invention. This summary is not intended to identify key or essential inventive concepts of the claimed subject matter, nor is it intended for determining the scope of the claimed subject matter.

A double crossbow with a single trigger mechanism disclosed herein addresses the above recited need for a device that can be loaded with two arrows and that is ready

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to fire both the arrows in quick succession, when a safety catch is released and a trigger is pulled in a normal way. The double crossbow with the single trigger mechanism disclosed herein comprises a barrel, an upper bow, a lower bow, and a single trigger mechanism. The double crossbow is manufactured using one or more of wood, metals, plastic, composite and fiberglass materials, with a variety of finishes applied to the manufactured double crossbow. The upper bow and the lower bow are disposed one on top of each other at a distal end of the barrel. The upper bow comprises a pair of split limbs with a first and a second end, a riser to receive the first end of the pair of split limbs, a cam affixed to the second end of each of the split limbs of the upper bow, a first cable affixed to the second end of each of the split limbs of the upper bow, and a first string extending from the cams of the upper bow to a top sear of the single trigger mechanism. The first cable works in tandem with the cams of the upper bow which is configured to adjust the shooting power of the upper bow.

The lower bow comprises a pair of split limbs with a first end and a second end, a riser to receive the first end of the pair of split limbs, a cam affixed to the second end of each of the split limbs of the lower bow, a second cable affixed to the second end of each of the split limbs of the lower bow, and a second string extending from the cams of the lower bow to a bottom sear of the single trigger mechanism. The second cable works in tandem with the cams of the lower bow to adjust the shooting power of the lower bow. The first arrow is loaded into the upper bow disposed on top of the barrel, and the second arrow is loaded into the lower bow disposed at the bottom of the barrel. The first arrow and the second arrow can be loaded individually in the double crossbow and one of the first arrow and the second arrow is shot in succession when the single trigger is squeezed in succession. The double crossbow further comprises a cocking rope configured to cock the first string of the upper bow and the second string of the lower bow to the top and bottom sears of the single trigger mechanism.

The single trigger mechanism is positioned at a proximal end of the barrel and is configured to shoot two arrows in succession without the need for reloading an arrow between the shooting of the two arrows. The top sear and bottom sear of the single trigger mechanism are configured to hold the first string and the second string before shooting. A first arrow is shot from the upper bow when a single trigger of the single trigger mechanism is squeezed completely a first time. Thereafter, a second arrow is shot from the lower bow when the single trigger of the single trigger mechanism is squeezed completely a second time. The single trigger mechanism is configured to not shoot the first arrow and the second arrow simultaneously. The double crossbow further comprises a safety catch to prevent the first arrow and the second arrow from being released accidentally.

BRIEF DESCRIPTION OF THE DRAWINGS

The foregoing summary, as well as the following detailed description of the invention, is better understood when read in conjunction with the appended drawings. For the purpose of illustrating the invention, exemplary constructions of the invention are shown in the drawings. However, the invention is not limited to the specific methods and components disclosed herein.

FIG. 1 exemplarily illustrates a front top perspective of a double crossbow with a single trigger mechanism.

FIG. 2 exemplarily illustrates a front top perspective of a double crossbow after shooting a first arrow.

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FIG. 3 exemplarily illustrates a front bottom perspective of a double crossbow with a single trigger mechanism.

FIG. 4 exemplarily illustrates an exploded view of front section of the double crossbow.

FIG. 5 exemplarily illustrates a right side view of the double crossbow.

FIG. 6 exemplarily illustrates a sectional view of the double crossbow illustrated in FIG. 5.

FIG. 7 exemplarily illustrates a top view of the double crossbow.

FIG. 8 exemplarily illustrates a single trigger mechanism of the double crossbow.

FIGS. 9A-9C exemplarily illustrate components of a single trigger mechanism.

DETAILED DESCRIPTION OF THE INVENTION

FIG. 1 exemplarily illustrates a front top perspective of a double crossbow 100 with a single trigger mechanism 118. The double crossbow 100 with a single trigger mechanism 118 disclosed herein comprises a barrel 101, an upper bow 102, a lower bow 103, and a single trigger mechanism 118. The double crossbow 100 is manufactured using one or more of wood, metals, plastic, composite and fibreglass materials, with a variety of finishes applied to the manufactured double crossbow 100. The upper bow 102 and the lower bow 103 are positioned one on top of each other at a distal end 101b of the barrel 101. The upper bow 102 comprises a pair of split limbs 104 and 105. The split limb 104 comprises a first end 104a and a second end 104b, and the split limb 105 comprises a first end 105a and a second end 105b. The double crossbow 100 further comprises a riser 106 to receive the first ends 104a and 105a of the pair of split limbs 104 and 105. The upper bow 102 further comprises cams 107 and 108. The cams 107 and 108 are affixed to the second ends 104b and 105b, respectively, of each of the split limbs 104 and 105 of the upper bow 102. The upper bow 102 further comprises a first cable 126 affixed to the second ends 104b and 105b of each of the split limbs 104 and 105, and a first string 109 extending from the cams 107 and 108 of the upper bow 102 to a top sear 801 of the single trigger mechanism 118, as exemplarily illustrated in FIG. 8. The first cable 126 works in tandem with the cams 107 and 108 of the upper bow 102 to adjust the shooting power of the upper bow 102.

The lower bow 103 comprises a pair of split limbs 110 and 111. The split limb 110 comprises a first end 110a and a second end 110b. The split limb 111 comprises a first end 111a and a second end 111b. The riser 106 receives the first ends 110a and 111a of the pair of split limbs 110 and 111. The lower bow 103 further comprise cams 112 and 113. The cams 112 and 113 are affixed to the second ends 110b and 111b, respectively, of each of the split limbs 110 and 111 of the lower bow 103. The lower bow 103 further comprises a second cable 127 affixed to the second ends 110b and 111b of each of the split limbs 110 and 111 of the lower bow 103, and a second string 114 extending from the cams 112 and 113 of the lower bow 103 to a bottom sear 802 of the single trigger mechanism 118, as exemplarily illustrated in FIG. 8. The second cable 127 works in tandem with the cams 112 and 113 of the lower bow 103 to adjust the shooting power of the lower bow 103.

As illustrated in FIG. 1, the second ends 104b and 105b, of each of the split limbs 104 and 105 of the upper bow 102 comprise slots 104c and 105c, respectively which define mounting forks, for mounting axle pins 104d and 105d. The

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cams 107 and 108 of the upper bow 102 are concentrically mounted on the axle pins 104d and 105d, respectively, for rotation about axle pins 104d and 105d. As illustrated in FIGS. 1 and 3, the second ends 110b and 111b, of each of the split limbs 110 and 111 of the lower bow 103 comprise slots 110c and 111c, respectively which define mounting forks, for mounting axle pins 110d and 111d. The cams 112 and 113 of the lower bow 103 are concentrically mounted on the axle pins 110d and 111d, respectively, for rotation about axle pins 110d and 111d. Also, as illustrated in FIGS. 1-4, the cam 107 affixed to the second end 104b of the upper limb 104 and the cam 112 affixed to the second end 110b of the lower limb 110 face each other and are concentric to each other. Similarly, the cam 108 affixed to the second end 105b of the upper limb 105 and the cam 113 affixed to the second end 111b of the lower limb 111 face each other and are concentric to each other.

The double crossbow 100 further comprises a cocking rope (not shown) configured to cock the first string 109 of the upper bow 102 and the second string 114 of the lower bow 103 to the top sear 801 and the bottom sear 802 of the single trigger mechanism 118. The cocking rope is held in position in a rope slot 124a provided on a stock 124 of the double crossbow 100. In an embodiment, to cock the first string 109 of the upper bow 102, the double crossbow 100 is placed vertically on a ground surface with the stirrup 120 resting on the ground surface. The archer places one of his foot on the stirrup 120 and puts his weight on the stirrup 120. A mid-section of the cocking rope is passed through the rope slot 124a. One end of the cocking rope is looped around a portion of the first string 109 proximal to the second end 105b of the split limb 105 and another end of the cocking rope is looped around a portion of the first string 109 proximal to the second end 104b of the split limb 104. Both the ends of the cocking rope are then simultaneously pulled towards the stock 124. The first string 109 is pulled over the top sear 801 and released to cock the first string 109 of the upper bow 102 to the top sear 801. The cocking rope is used to similarly cock the second string 114 of the lower bow 103 to the bottom sear 802. As illustrated in FIG. 1, the first arrow 115 is loaded into the upper bow 102 disposed on top of the barrel 101, and the second arrow 116 is loaded into the lower bow 103 disposed at the bottom of the barrel 101. The first arrow 115 and the second arrow 116 can be loaded singularly in the double crossbow 100 and one of the first arrow 115 and the second arrow 116 is shot when the single trigger 117 is squeezed. When the first arrow 115 is loaded into the upper bow 102 or when the second arrow 116 is loaded into the lower bow 103, the arrows 115 and 116 push a safety transfer plate 804, shown in FIG. 8. The safety transfer plate 804 pushes the safety catch lever 806 causing a locator spring 805 to shift from a first groove 804a to a second groove 804b on the safety transfer plate 804. The safety transfer plate 804 also pushes the interference block 810 back into a pre-firing position which vertically aligns a sharp end 810b of the interference block 810, as shown in FIG. 8. The interference block 810 rotates about a pin 810a, in an anticlockwise direction to vertically align the sharp end 810b of the interference block 810. The safety transfer plate 804 overcomes the locator spring 805 while engaging the interference block 810 via a pin 804c impinging on a cam surface 810c on the interference block 810 to positively engage the interference block 810 in a safe position.

The interference block 810 comprises an interference block pin 810d. The interference block pin 810d engages with the top release bar 808, via a cam surface 808c on the top release bar 808 and the top release bar 808 is pushed up

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to engage with the top sear **801**. When the second string **114** is pulled into the trigger mechanism **118** using the cocking rope, the second string **114** string rides over the bottom sear **802**, rotating the bottom sear **802** in an anticlockwise direction to allow the bottom release bar **809** to move into place under the force of a bottom release bar spring **809d**. The bottom release bar spring **809d** is secured to the bottom release bar **809** through a pin **809c** that goes through the bottom release spring **809d** and the bottom release bar **809**. One end of the bottom release bar spring **809d** pushes against a pin **118a**, shown in FIG. **8**, and another end of the bottom release spring **809d** pushes up against a second end **809b** of the bottom release bar **809**. The bottom release bar spring **809d** is configured to maintain the bottom release bar **809** on a horizontal level when the second string **114** is engaged in the trigger mechanism **118**. The bottom release bar spring **809d** is configured to bend under and then back out from the bottom release bar **809** when the second end **809b** of the bottom release bar **809** rotates in an anticlockwise direction during shooting of the second arrow **116**, and then down and back to avoid jamming on the trigger **118** during operation.

The single trigger mechanism **118** is positioned at a proximal end **101a** of the barrel **101** and is configured to shoot two arrows **115** and **116** in succession without reloading an arrow between two shots. The top sear **801** and the bottom sear **802** of the trigger mechanism **118**, exemplarily illustrated in FIG. **8**, are configured to hold the first string **109** and the second string **114** before shooting. The first arrow **115** is shot from the upper bow **102** when a single trigger **117** of the single trigger mechanism **118** is squeezed completely a first time, as exemplarily illustrated in FIG. **2**. The top sear **801** holding the first string **109** is disengaged when the single trigger **117** of the single trigger mechanism **118** is squeezed completely the first time. The second arrow **116** is shot from the lower bow **103** when the single trigger **117** of the single trigger mechanism **118** is squeezed completely a second time. The bottom sear **802** holding the second string **114** is disengaged when the single trigger **117** of the single trigger mechanism **118** is squeezed completely the second time. The single trigger mechanism **118** is configured not to shoot the first arrow **115** and the second arrow **116** simultaneously, as explained in detailed description of FIG. **8**. The double crossbow **100** further comprises a safety catch (not shown) to prevent the first arrow **115** and the second arrow **116** from being released accidentally.

As illustrated in FIGS. **1** and **2**, the double crossbow **100** further comprises a sight bridge **119**, a stirrup **120**, a quiver **121**, a pair of retention springs **122** and **123**, a stock **124**, and a foregrip **125**. The sight bridge **119** comprises a telescopic sight **130** attached to the sight bridge **119**, as shown in FIG. **1**. The telescopic sight **130** is used for accurately aiming the double crossbow **100** at a target before shooting the first and second arrows **115** and **116**. The stirrup **120** is used by the archer hold a foot of the archer when the cocking rope (not shown) is used for the cocking of the upper bow **102** and the lower bow **103** to the sears **801** and **802** in the single trigger mechanism **118**. The quiver **121** is configured to hold a plurality of arrows. The pair of retention springs **122** and **123** are configured to hold the first arrow **115** and the second arrow **116**, respectively, before shooting the first and the second arrows **115** and **116**. The stock **124** is configured for holding the double crossbow **100** while shooting the first arrow **115** and the second arrow **116**. The foregrip **125** is configured for holding the double crossbow **100** while aiming at a target before shooting.

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FIG. **3** exemplarily illustrates a front bottom perspective of a double crossbow with a single trigger mechanism. The foregrip **125** fitted at the bottom of the barrel **101** aids the archer to keep the double crossbow **100** lined up with the target and steady archers aim.

FIG. **4** exemplarily illustrates an exploded view of front section of the double crossbow **100**. The barrel **101** of the double crossbow **100** is manufactured using one or more of wood, metals, plastic, composite, carbon fibre, and fibre-glass materials. The barrel **101** comprises rails **201** and **202** on its top and bottom surface for slotting in the first arrow **115** and the second arrow **116** into the upper bow **102** and the lower bow **103** respectively. The track **201** on the top of the barrel **101** aligns the first arrow **115** and the first string **109** of the upper bow **102**. The track **202** on the bottom of the barrel **101** aligns the second arrow **116** and the second string **114** of the lower bow **103**. The upper bow **102**, the lower bow **103**, the raiser **106**, the stirrup **120**, the quiver **121**, and the foregrip **125** are fastened to the barrel **101** using fastening screws. As illustrated in FIG. **4**, the raiser **106** comprises a central housing **106a**, a first attachment **106a** and a second attachment **106b**. The central housing **106a** is configured to attach the stirrup **102**, the quiver **121**, the upper bow **102** and the lower bow **103** to the barrel **101**. The first attachment **106a** is configured to attach the split limbs **105** and **111** to the barrel **101** via the central housing **106a**. The second attachment **106b** is configured to attach the split limbs **104** and **110** to the barrel **101** via the central housing **106a**. In an embodiment the upper bow **102**, the lower bow **103**, the raiser **106**, the stirrup **120**, the quiver **121**, and the foregrip **125** are removably attached to the barrel **101**.

FIG. **5** exemplarily illustrates a right side view of the double crossbow **100**. The double crossbow **100** enables an archer to fire two arrows onto a target without having to reload the second arrow between shots. The archer holds the double crossbow **100** at the stock **124** while shooting the arrows **115** and **116**. The stock **124** is the base of the crossbow which holds the single trigger mechanism **118** and the barrel **101**. The sight bridge **119** comprises a picatinny rail system **119a**, as shown in FIGS. **5**, **6**, and **8**. The sight bridge **119** comprising the picatinny rail system **119a** is disposed on top of the single trigger mechanism **118**, as shown in FIG. **5**. As exemplarily illustrated in FIG. **6**, the picatinny rail system **119a** of the sight bridge **119** provides a mounting platform for accessories such as telescopic sights **120**, iron sights, tactical lights, laser aiming modules, night vision devices, reflex sights, foregrips, bipods, slings and bayonets, etc. The foregrip **125** fitted at the bottom of the barrel **101** further accommodates the accessories and allows the safe use of the double crossbow **100**. In an embodiment the foregrip **125** is one of a collapsible foregrip and a removable foregrip. The double crossbow **100** further comprises a raised comb (not shown) positioned on top of the stock **124** to compliment fitted telescopic sight **119**. The raised comb will be fitted on top of the stock **124** using slinging attachments.

FIG. **7** exemplarily illustrates a top view of the double crossbow **100**. As illustrated in FIGS. **1-4**, **5** and **7**, the quiver **121** is fastened to a right side of the barrel **101**, proximal to the stirrup **120**. The quiver **121** is angled away from the arrows **115** and **116** loaded into the double crossbow **100**. The quiver **121** is also angled away from a line of sight of a telescopic sight **119** mounted on the sight bridge **119**. In an embodiment, the quiver **121** is mounted at the bottom of the double crossbow **100**. In another embodiment, the quiver **121** is mounted at the left side of the barrel **101** of the double crossbow **100**. In another embodiment, the

quiver **121** is mounted at the top of the double crossbow **100**. The quiver **121** can be configured in any desired shape and size to hold a predetermined number of arrows. As illustrated in FIG. 7, the raiser **106** is first slid onto the front end **101a** the barrel **101**. The stirrup **120** is then slid on top of the raiser **106** and the quiver **121** is then slid on top of the stirrup **120**. The raiser **106**, the stirrup **120** and the quiver **121** are attached to the distal end **101b** of the barrel **101**, as shown in FIG. 1. The archer places his foot on the stirrup **120** to prevent the double crossbow **100** from slipping while cocking it. The stirrup **120** also protects the arrows end from damage.

FIG. 8 exemplarily illustrates a single trigger mechanism **118** of the double crossbow **100**. The single trigger mechanism **118** is positioned at a proximal end **101a** of the barrel **101** and is configured to shoot two arrows **115** and **116** in succession without reloading a second arrow between two shots. The single trigger mechanism **118** comprises a top sear **801**, a bottom sear **802**, a safety catch lever extension **129** attached to a safety catch lever **806**, a safety transfer plate **804**, a locator spring **805**, a safety catch block **803**, a trigger block **807**, a top release bar **808**, a bottom release bar **809**, an interference block **810**, a sear spring **811**, and a bottom release bar spring **812**. The safety catch lever **806** connects the safety catch lever extension **129**, the safety transfer plate **804**, and the safety catch block **803**. When the bow, for example, the upper bow **102** is cocked, the first bow string **109** is pushed against the safety transfer plate **804**, which, in turn pushes the safety catch block **803** and simultaneously pushes the safety catch lever extension **129** out to reflect the safe position. The safety transfer plate **804** also pushes the interference block **810**, anticlockwise via the pin **804c**, engaging on the cam surface **810c** on the interference block **810**, and pushes the safety catch lever **806**, which, in turn causes the safety catch block **803**, to engage the trigger block **807**.

When both bows **102** and **103** are cocked, the top sear **801** and the bottom sear **802** holds the first string **109** and the second string **114** in place respectively before shooting the first and second arrows **115** and **116**. The safety catch block **803** is configured to prevent the first arrow **115** and the second arrow **116** from being released when the safety catch block **803** is activated by sliding the safety catch block **803** forward to block an upward movement of the trigger block **807**. The safety catch block **803** is further configured to be deactivated by sliding the safety catch block **803** backwards to unblock or allow an upward movement of the trigger block **807**. The safety catch block **803** slides forward when the archer pushes the safety catch lever extension **129** forward and the safety catch block **803** slides backwards when the archer pushes the safety catch lever extension **129** forward. The safety catch is further configured to allow release of the first arrow **115** when deactivated and when the single trigger **117** of the single trigger mechanism **118** is squeezed completely a first time. The safety catch is further configured to allow release of the second arrow **116** when deactivated and when the single trigger **117** of the single trigger mechanism **118** is released and squeezed completely a second time. The safety transfer plate **804** is configured to be pushed forward when the safety catch is deactivated by pushing it forward, through the action of safety catch lever **806**.

The safety transfer plate **804** overcomes a locator spring **805** when pushed forward and causes the safety catch lever **806** to rotate about pin **806a** and cause the safety catch block **803** to disengage from the trigger block **807**, allowing the trigger block **807** to rise when the single trigger **117** of the

single trigger mechanism **118** is pulled for the first time. The single trigger **117** rotates in an anticlockwise direction about a pivot pin **117a** when the trigger **117** is pushed. The trigger block **807** is configured to rise and push up against a first end **808a** of a top release bar **808** when the single trigger **117** of the trigger mechanism **118** is completely squeezed for the first time, causing a second end **808b** of the top release bar **808** to move down and disengage from the top sear **801**, enabling the top sear **801** to rotate freely, enabling the first string **109** to be pulled out over the top sear **801** and release the first arrow **115** out onto a target. The trigger block **807** is stopped from further rising up when it comes into contact with an interference block **810**. The interference block **810** starts to rotate about the pin **810a**, in a clockwise direction, but the interference block **810** is precluded from fully rotating when the sharp end **810b** of the interference block **810** impinges on a side of the trigger block **807**. When the single trigger **117** is released after shooting the first arrow **115**, the trigger block **807** will move down and disengage from the interference block **810b**, allowing the interference block **810** to rotate about the pin **810a**, in a clockwise direction, under an internal spring pressure and creates space for further travel of the trigger block **807** on a second pull of the single trigger **117**.

The single trigger **117** of the trigger mechanism **118** when completely squeezed for the second time, causes the interference block **810** to rise again. When the interference block **810** rises, the interference block **810** pushes up against a first end **809a** of a bottom release bar **809**. The bottom release bar **809** rotates in an anticlockwise direction about the pin **809c**, and the second end **809b** of the bottom release bar **809** disengages from the bottom sear **802** and slots into a slot **802b** located proximal to a first end **802c** of the bottom sear **802**. The bottom sear **802** after disengaging from the bottom release bar **809** rotates in a clockwise direction about pin **802a**. When the bottom sear **802** freely rotates in the clockwise direction about pin **802a** after disengaging from the bottom release bar **809**, the second string **114** is pulled out over the bottom sear **802** and the second arrow **116** is released onto the target. The trigger mechanism **118** is reset when the first string **109** and the second string **114** are re-cocked using a cocking rope. The safety catch is activated after resetting the trigger mechanism **118** by pulling back the safety catch from its pushed forward position. The single trigger mechanism **118** is configured to not shoot the first arrow **115** and the second arrow **116** simultaneously. The safety catch of the double crossbow **100** prevents the first arrow **115** and the second arrow **116** from being released accidentally.

FIGS. 9A-9C exemplarily illustrate the following components: the top sear **801**, the bottom sear **802**, the safety transfer plate **804**, the locator spring **805**, the safety catch lever **806**, the trigger block **807**, the top release bar **808**, the bottom release bar **809**, the interference block **810**, and the trigger **117**, of a single trigger mechanism **118**.

The foregoing examples have been provided merely for the purpose of explanation and are in no way to be construed as limiting of the present invention disclosed herein. While the invention has been described with reference to various embodiments, it is understood that the words, which have been used herein, are words of description and illustration, rather than words of limitation. Further, although the invention has been described herein with reference to particular means, materials, and embodiments, the invention is not intended to be limited to the particulars disclosed herein; rather, the invention extends to all functionally equivalent structures, methods and uses, such as are within the scope of

the appended claims. Those skilled in the art, having the benefit of the teachings of this specification, may affect numerous modifications thereto and changes may be made without departing from the scope and spirit of the invention in its aspects.

I claim:

1. A double crossbow with a single trigger mechanism, said double crossbow comprising:

a barrel;

an upper bow and a lower bow positioned one on top of each other at a distal end of said barrel; and

a single trigger mechanism positioned at a proximal end of said barrel, said trigger mechanism configured to shoot a first arrow and thereafter to shoot a second arrow, wherein the first arrow is shot from said upper bow when a single trigger of said single trigger mechanism is squeezed completely a first time, and wherein the second arrow is shot from said lower bow when said single trigger of said single trigger mechanism is squeezed completely a second time, wherein said single trigger mechanism comprises:

a safety catch configured to preclude said first arrow and said second arrow from being released when said safety catch is activated, said safety catch further configured to be deactivated when pushed forward, said safety catch further configured to release said first arrow when deactivated and when said single trigger of said single trigger mechanism is squeezed completely a first time, and said safety catch further configured to allow release of said second arrow when deactivated and when said single trigger of said single trigger mechanism is squeezed completely a second time;

a safety transfer plate configured to be pushed forward when said safety catch is deactivated by pushing it forward, wherein said pushing forward of said safety transfer plate overcomes a locator spring and causes a safety catch lever to rotate and cause a safety catch block to disengage from a trigger block, allowing said trigger block to rise when said single trigger of said single trigger mechanism is pulled the first time; said trigger block configured to rise and push up a first end of a top release bar when said single trigger of said trigger mechanism is completely squeezed the first time, causing a second end of said top release bar to move down and disengage from said top sear, enabling said top sear to rotate freely, and enabling said first string to be pulled out over said top sear and release said first arrow to a target;

said trigger block further configured to stop rising when it comes in contact with an interference block, wherein said interference block starts to rotate but is precluded from fully rotating by impingement of the interference block on a side of said trigger block, wherein when said single trigger is released after shooting said first arrow, said interference block continues to rotate under an internal spring pressure and creates space for further travel of said trigger block on a second pull of said single trigger; and said single trigger of said trigger mechanism when completely squeezed for the second time, causes said interference block to rise again, wherein when said interference block rises, said interference block pushes up a bottom release bar which rotates and disengages said bottom sear which becomes free to rotate, wherein when said bottom sear freely rotates,

said second string is pulled out over said bottom sear and said second arrow is released onto said target.

2. The double crossbow of claim 1, wherein said upper bow comprises a pair of split limbs with a first end and a second end, a riser to receive said first end of said pair of split limbs, a cam affixed to said second end of each of said split limbs of said upper bow, a first cable affixed to said second end of each of said split limbs of said upper bow, and a first string extending from said cams of said upper bow to a top sear of said single trigger mechanism.

3. The double crossbow of claim 2, wherein said first cable works in tandem with said cams of said upper bow to adjust the shooting power of said upper bow.

4. The double crossbow of claim 1, wherein said lower bow comprises a pair of split limbs with a first end and a second end, a riser to receive said first end of said pair of split limbs, a cam affixed to said second end of each of said split limbs of said lower bow, a second cable affixed to said second end of each of said split limbs of said lower bow, and a second string extending from said cams of said lower bow to a bottom sear of said single trigger mechanism.

5. The double crossbow of claim 4, wherein said second cable works in tandem with said cams of said lower bow to adjust the shooting power of said lower bow.

6. The double crossbow of claim 1, wherein said first arrow is loaded into said upper bow disposed on top of said barrel, and said second arrow is loaded into said lower bow disposed at bottom of said barrel.

7. The double crossbow of claim 1, wherein one of said first arrow and said second arrow is loaded singularly in said double crossbow, and said one of said first arrow and said second arrow is shot when said single trigger is squeezed.

8. The double crossbow of claim 1, wherein said single trigger mechanism is configured to not shoot said first arrow and said second arrow simultaneously.

9. The double crossbow of claim 1, further comprising a safety catch to prevent said first arrow and said second arrow from being released accidentally.

10. The double crossbow of claim 1, further comprising a telescope attachment with a sight bridge configured for aiming a target before shooting said first and second arrows.

11. The double crossbow of claim 1, wherein said single trigger mechanism comprises a top sear and a bottom sear, wherein said top sear is configured to hold said first string before shooting said first arrow and said bottom sear is configured to hold said second string before shooting said second arrow.

12. The double crossbow of claim 11, further comprising a cocking rope configured to cock said first string of said upper bow and said second string of said lower bow to said top and bottom sears of said single trigger mechanism.

13. The double crossbow of claim 12, further comprising a stirrup configured to hold a foot of an archer when said cocking rope is used for said cocking of said upper bow and said lower bow to said top and bottom sears of said single trigger mechanism.

14. The double crossbow of claim 1, further comprising a quiver configured to hold a plurality of arrows, and further comprising a pair of retention springs configured to hold said first arrow and said second arrow before shooting said first arrow and said second arrow.

15. The double crossbow of claim 1, further comprising a stock configured for holding said double crossbow while shooting said first arrow and said second arrow, and further comprising a foregrip configured for holding said double crossbow while aiming at a target before shooting.

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16. The double crossbow of claim 1, wherein said barrel comprises rails on its top and bottom surface for slotting in said first arrow and said second arrow into said upper bow and said lower bow respectively.

17. The double crossbow of claim 1, wherein said double crossbow is manufactured using one or more of wood, metals, plastic, composite and fibreglass materials, with a variety of finishes applied to said manufactured double crossbow.

18. The double crossbow of claim 1, wherein said trigger mechanism is reset when said first string and said second string are re-cocked using a cocking rope, and wherein said safety catch is activated after resetting said trigger mechanism by pulling back said safety catch from its pushed forward position.

19. A single trigger mechanism for double crossbow, comprising:

a top sear and a bottom sear for holding a first string and a second string of said double crossbow in place respectively before shooting a first arrow and a second arrow;

a safety catch configured to prevent said first arrow and said second arrow from being released when said safety catch is activated, said safety catch further configured to be deactivated when pushed forward, said safety catch further configured to allow release of said first arrow when deactivated and when a single trigger of said single trigger mechanism is squeezed completely a first time, and said safety catch further configured to allow release of said second arrow when deactivated and when said single trigger of said single trigger mechanism is squeezed completely a second time;

a safety transfer plate configured to be pushed forward when said safety catch is deactivated by pushing it

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forward, wherein said pushing forward of said safety transfer plate overcomes a locator spring and causes a safety catch lever to rotate and cause a safety catch block to disengage from a trigger block, allowing said trigger block to rise when said single trigger of said single trigger mechanism is pulled for the first time; said trigger block configured to rise and push up a first end of a top release bar when said single trigger of said trigger mechanism is completely squeezed for the first time, causing a second end of said top release bar to move down and disengage from said top sear, enabling said top sear to rotate freely, enabling said first string to be pulled out over said top sear and release said first arrow out onto a target;

said trigger block further configured to stop rising when it comes into contact with an interference block, wherein said interference block starts to rotate but is precluded from fully rotating by impingement of the interference block on a side of said trigger block, wherein when said single trigger is released after shooting said first arrow, said interference block continues to rotate under an internal spring pressure and creates space for further travel of said trigger block on a second pull of said single trigger; and

said single trigger of said trigger mechanism when completely squeezed for the second time, causes said interference block to rise again, wherein when said interference block rises, said interference block pushes up a bottom release bar which rotates and disengages said bottom sear which becomes free to rotate, wherein when said bottom sear freely rotates, said second string is pulled out over said bottom sear and said second arrow is released onto said target.

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