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Cesin

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[54] **CROSSBOW WITH COILED SPRING FORCE DEVELOPING MEANS FOR PROJECTING AN ARTICLE**

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[52] **U.S. Cl.** ..... **124/16,** 124/35 A, 124/30 R, 33/265, 33/233

[51] **Int. Cl.** **F41b 5/00**

[58] **Field of Search** ..... 124/25, 35 R, 41, 40, 22, 124/26, 27, 30 R; 33/265, 233

[56] **References Cited**

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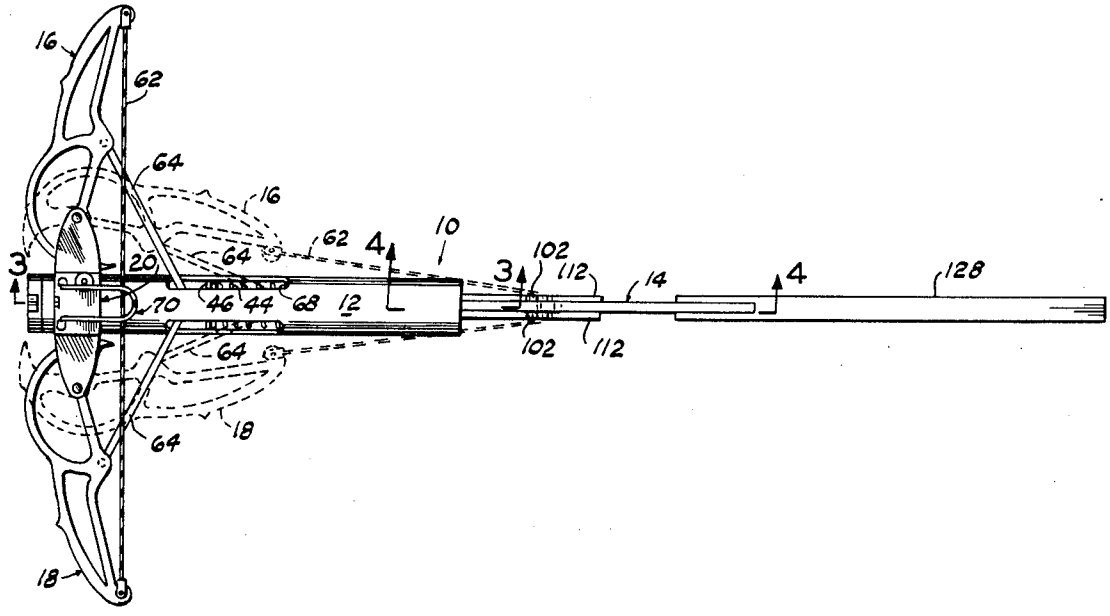
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Assistant Examiner—William R. Browne
Attorney, Agent, or Firm—Robert K. Rhea

[57] **ABSTRACT**

An elongated casing is connected at one end with a bow string trigger released mechanism and gunstock. A pair of bow string interconnected wings are pivotally connected to the other end portion of the casing with the wings and being normally biased forwardly in aligned opposition transversely of the casing by a spring within the casing bearing against one end of push rods pivotally engaging, at their other ends, the respective wing intermediate its ends. Adjustable sight means is secured to the casing between the pair of wings.

4 Claims, 8 Drawing Figures



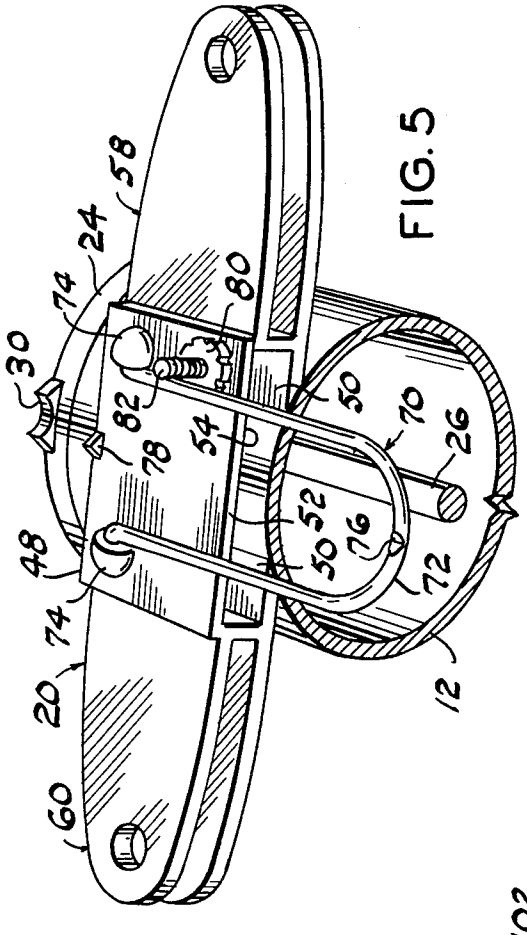


FIG. 5

FIG. 1

FIG. 6

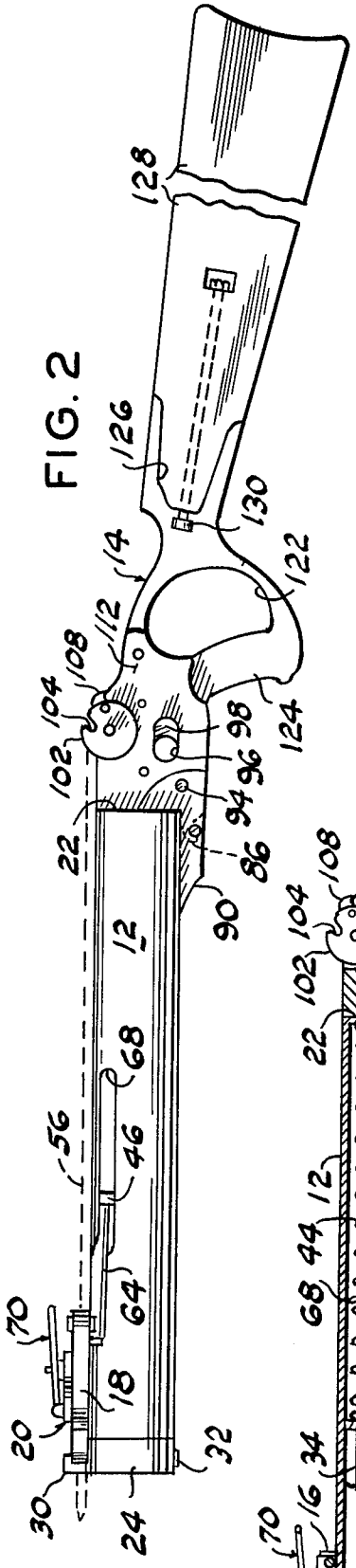


FIG. 2

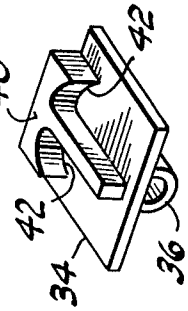


FIG. 7

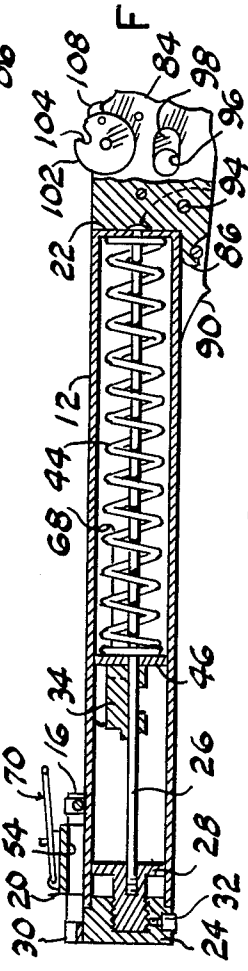


FIG. 3

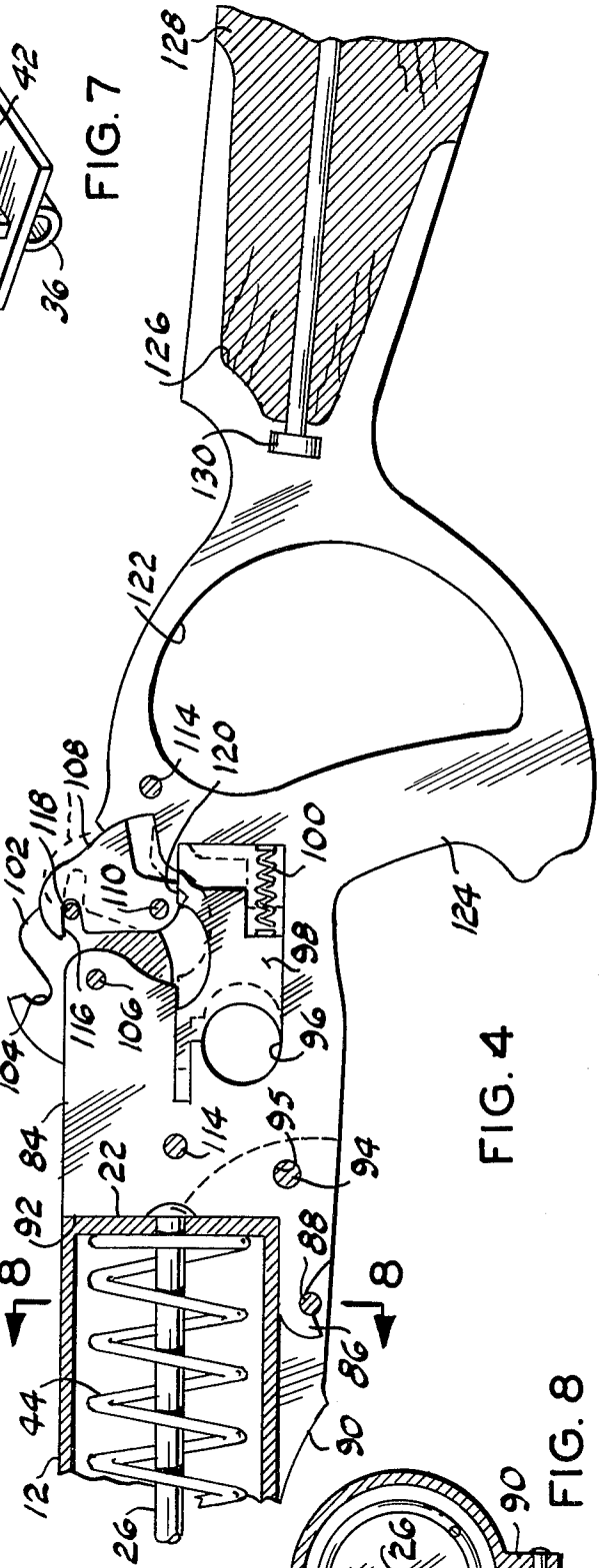


FIG. 4

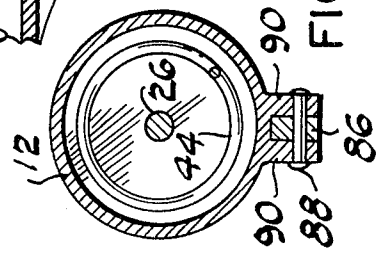


FIG. 8

CROSSBOW WITH COILED SPRING FORCE DEVELOPING MEANS FOR PROJECTING AN ARTICLE

BACKGROUND OF THE INVENTION

Field of the Invention

The present invention relates to crossbows and more particularly to a carbine-type crossbow.

SUMMARY OF THE INVENTION

An elongated casing is connected at one end with a guntype stock having trigger means for holding and releasing the bow string. A bracket, transversely overlying and secured to the other end portion of the casing, pivotally mounts one end portion of a pair of wings interconnected at their other ends by a bow string. The casing contains a compression spring which biases a follower toward the forward end of the casing. The follower being slidably supported by a rod coaxially disposed within the casing. A pair of push rods extend at one end portion through elongated slots formed in the casing wall for engagement with the follower and are pivotally engaged at their other ends with the respective wing intermediate its ends. Sight means, supported by the wing mounting bracket, is adjustable for aiming a quarrel, overlying and supported by the casing, toward a target.

The principal object is to provide a carbine-type crossbow having a trigger equipped crossbow string holding and releasing means and further including a casing containing a compression spring normally biasing a pair of wings, pivotally connected with the casing, forwardly in a quarrel discharging action.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. **1** is a top view of the crossbow illustrating the wings in cocked position by dotted lines;

FIG. **2** is a side elevational view of the crossbow illustrating a supported quarrel by dotted lines;

FIG. **3** is a fragmentary vertical cross sectional view taken substantially along the line **3—3** of FIG. **1**;

FIG. **4** is a fragmentary vertical cross sectional view, to an enlarged scale, partially in elevation, taken substantially along the line **4—4** of FIG. **1**;

FIG. **5** is a fragmentary perspective view, to a further enlarged scale, of the forward end portion of the casing and the wing mounting bracket;

FIG. **6** is a fragmentary inverted perspective view of one of the crossbow wings and push rod;

FIG. **7** is a perspective view of the spring urged push rod follower; and,

FIG. **8** is a vertical cross sectional view taken substantially along the line **8—8** of FIG. **4.**

Like characters of reference designate like parts in those figures of the drawings in which they occur.

In the drawings:

The reference numeral **10** indicates the crossbow which is substantially carbine-like in general appearance comprising a casing **12** having a gunstock portion **14** connected to one end of the casing and having a pair of wings **16** and **18** pivotally connected to the other end portion of the casing by bracket means **20.** The casing **12** is elongated tubular having a rearward closed end **22** and its forward end closed by a cap **24.** A rod **26,** substantially coextensive with the casing **12,** extends through the casing end **22** and is threadedly connected with a guide flange lug **28** in turn threadedly connected

coaxially with the cap **24.** The cap **24** is provided with a quarrel rest or guide **30** (FIG. **5**) with the cap being maintained in a fixed position relative to the casing by a set screw **32.** A push rod plate **34,** having apertured lugs **36** surrounding the rod **26,** is slidable longitudinally therealong. The push rod plate **34** is platform-like and is loosely received by the bore of the casing **12** and includes an upstanding T-shaped projection **40** on its surface opposite the lugs **36** forming opposing push rod end receiving recesses **42** for the purposes presently explained.

A compression spring **44** surrounds the rod **26** and extends between the inner surface of the casing end wall **22** and a follower disk **46** surrounding the rod adjacent the push rod plate **34** for normally urging the push rod plate toward the forward end of the casing.

The winging mounting bracket **20** includes a central box-like body portion **48** having a divided lower horizontal wall **50** rigidly secured, as by welding, to the outer surface of the casing thus disposing its upper horizontal wall **52** in spaced relation with respect to the upwardly disposed surface of the casing and defining an opening **54** through which the quarrel **56** extends as indicated by dotted lines (FIG. **2**). Laterally projecting vertically spaced and apertured pairs of ears **58** and **60** are secured to respective sides of the bracket body **48** for pivotally connecting one end portion of the respective open frame-type wings **16** and **18** thereto. A bow string **62** extends between and is connected with the other end of the wings **16** and **18.** A pair of push rods **64** pivotally contact, at one end portion, a pin **66** depending from the respective wing intermediate its ends and project at their other end portions, through elongated slots **68** cooperatively formed in the casing **12** and nested by the respective push rod plate recess **42** so that the spring **44** normally maintains the wings **16** and **18** in the solid line position of FIG. **1.**

Sight means **70** is mounted on the bracket body **48** and comprises a substantially U-shaped member **72** having its leg ends pivotally connected respectively with a pair of socket forming lugs **74** secured to the upper wall **52** of the bracket for vertical pivoting movement of the bight portion of the U-shaped member. The bight portion of the U-shaped member is provided with a sight notch **76** aligned with a sight **78** secured in upstanding relation to the upper surface of the bracket wall **52.** A sight adjusting nut **80** is threadedly received by an upstanding screw **82** secured to the mounting bracket wall **52** adjacent one of the legs of the U-shaped member **72** with the screw **82** and nut **80** being calibrated for raising and lowering the bight portion of the U-shaped member a predetermined distance in accordance with the distance between the crossbow **10** and a target, not shown, toward which the quarrel **56** is to be launched.

The stock portion **14** comprises a central plate portion **84** having a hook-shaped forwardly projecting end portion **86** for engagement with a pin **88** extending between a pair of parallel walls **90** secured in depending relation to the rearward end portion of the casing. The forward end surface **92** of the plate **84** abuts the casing end **22** and is secured in this position by a shaft **92** removably received by a hole **95** transversely drilled through the plate **84** and walls **90.** The plate **84** is provided with a trigger and finger receiving recess **96** slidably receiving a trigger **98** normally urged forwardly by a spring **100.** A pair of bow string latches **102,** disk-like

in general configuration, each having a bow string receiving notch **104**, is axially connected flatly on respective side surfaces of the plate **84** by a latch pin **106**.

A catch **108** is pivotally mounted, at one end portion in the plane of the plate **84**, by a catch pin **110** extending transversely through a pair of plates **112** flatly overlying respective lateral surfaces of the plate **84** and secured thereto by plate pins **114**. The catch **108** is provided with a latch notch **116** releasably engaging a latch shaft **118**, extending transversely between and secured to the pair of latches **102**, thus when the trigger **98** is in its forward solid line position of FIG. **4**, its rearward platform surface **120** underlies, in contacting relation, a cooperating depending surface of the catch **108** and maintains the bow string latches in a locked position. Rearward movement of the trigger **98** releases the catch **108** to pivot rearwardly about its pin **110**, as shown by dotted lines (FIG. **4**), and in turn releasing the latches **102** thus permitting spring pressure applied to the wings **16** and **18** by the push rods **64** to launch the quarrel **56**.

The rearwardly projecting end portion of the plate **84** is provided with a hand receiving opening **122** forming a pistol-type hand grip portion **124** and defining a rearwardly open substantially U-shaped socket **126** at its rearward end which cooperatively nests the forward end portion of a gunstock **128** which is maintained in place by bolt and nut means **130**.

OPERATION

In operation the latch disks **102** are disposed, as shown by solid lines, and held in cocked position by the catch **108**. A quarrel **56** is placed on the upper surface of the casing **12** with its forward end extending through the wing mounting bracket opening **54** and supported by the quarrel guide recess **30** with its rearward end portion disposed between the disks **102** adjacent the bow string. The bow string being engaged medially its ends with the disk notches **104**. The sight means is usually previously adjusted in accordance with the estimated distance to the target. The crossbow is aimed by the sight means and the trigger **98** is manually released to discharge the quarrel.

Obviously the invention is susceptible to changes or alterations without defeating its practicability, therefore, I do not wish to be confined to the preferred embodiment shown in the drawings and described herein.

I claim:

1. A crossbow, comprising:

a casing having a forward end and a rearward end and having opposing longitudinal slots in its wall intermediate its ends;

wing mounting bracket means transversely connected to the forward end portion of said casing for pivoting mounting a pair of wings;

a pair of wings respectively connected, at one end portion, to respective end portions of said bracket means for pivoting movement of their other end portions toward and away from said casing;

a bow string extending between and connected with said other end portions of said wings;

an elongated compression spring within said casing;

push rod means passing through said slots and interposed between said wings and said spring for transfering a biasing force exerted by said compression spring, when the latter is compressed, to said other end portion of said wings in a forward direction to pivot the wings forwardly and cause the bow string to exert a force on a projectile and project a projectile forwardly;

a plate member connected with the rearward end of said casing; and,

trigger means supported by the forward end portion of said stock for releasably holding said bow string in crossbow cocked position.

2. The crossbow according to claim **1** in which said trigger means includes:

a pair of disk latch members respectively flatly connected to opposing side surfaces of said stock in coaxial alignment,

each said latch member having a bow string receiving recess in its peripheral surface,

said stock having a recess communicating with said pair of latch members;

a pair of side plates respectively flatly overlying opposing side surfaces of said stock;

a catch pivotally mounted within the stock recess between said side plates and releasably engaging said pair of latch members; and,

a trigger slidable within the stock recess and releasably supporting said catch.

3. The crossbow according to claim **2** in which said push rod means includes:

a rod coaxially supported by said casing;

a follower longitudinally slidably supported by said rod within said casing,

said follower having opposite push rod receiving recesses;

and,

a pair of push rods respectively nested at one end portion by the respective follower recess and pivotally contacting at their other ends the respective said wing intermediate its ends.

4. The crossbow according to claim **3** and further including:

sight means mounted on said bracket means,

said sight means comprising a front sight mounted on the uppermost surface of said bracket means,

a U-shaped receiving sight mounted on said bracket means for vertical pivoting movement, and,

receiving sight adjusting means mounted on said bracket means.

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