Oct. 3, 1967 D. M. MORRISON 3,344,546

SINGLE TRIGGER MECHANISM FOR A DOUBLE-BARRELED SHOTGUN

Filed Oct. 27, 1965 2 Sheets-Sheet 1

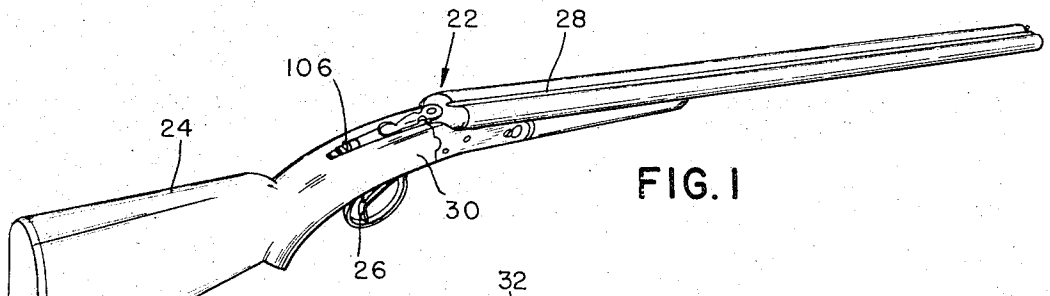


FIG. 1

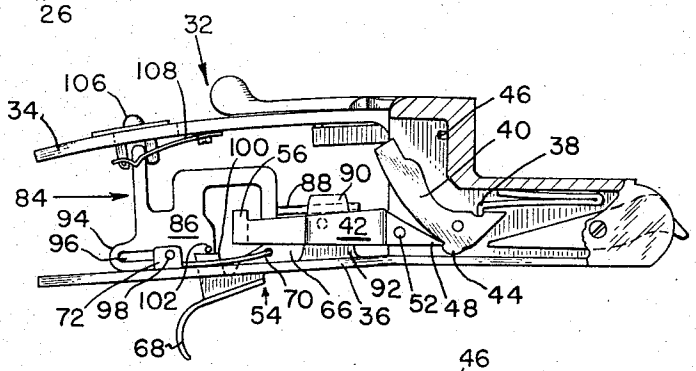


FIG. 2

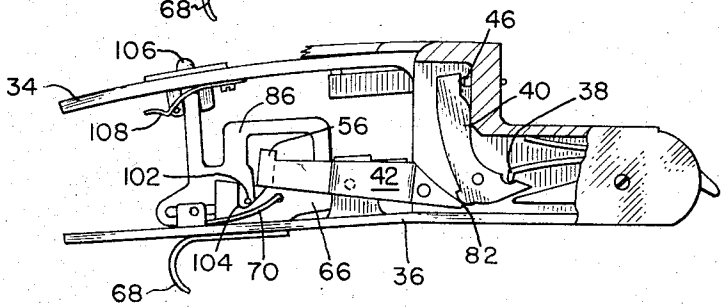


FIG. 3

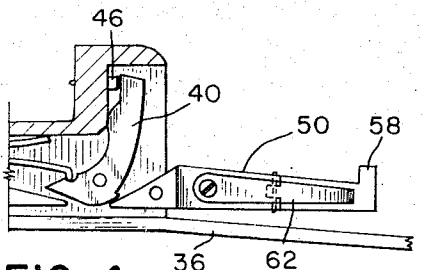


FIG. 4

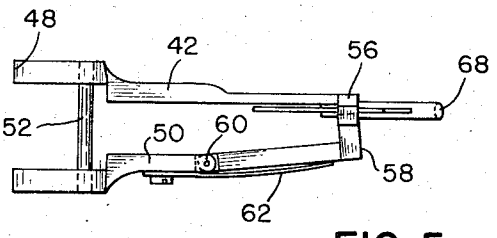


FIG. 5

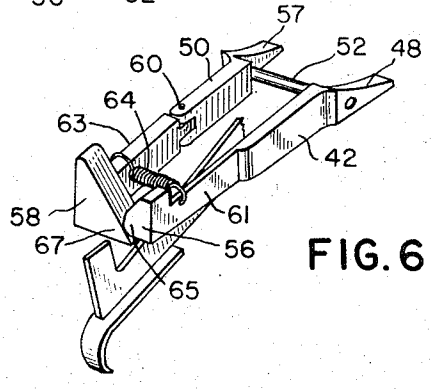


FIG. 6

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SINGLE TRIGGER MECHANISM FOR A DOUBLE-BARRELED SHOTGUN

Filed Oct. 27, 1965 2 Sheets-Sheet 2

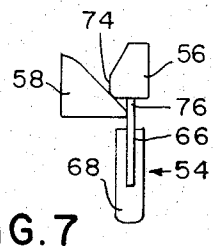


FIG. 7

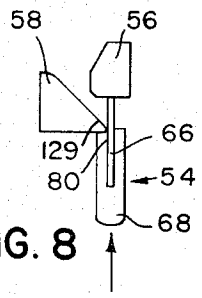


FIG. 8

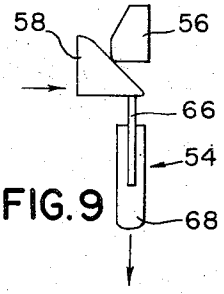


FIG. 9

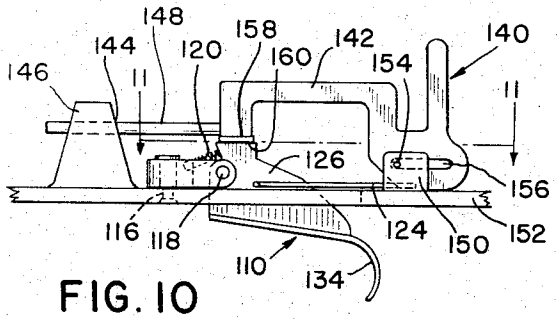


FIG. 10

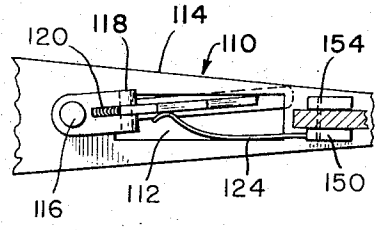


FIG. 11

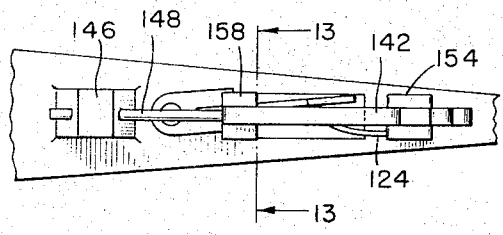


FIG. 12

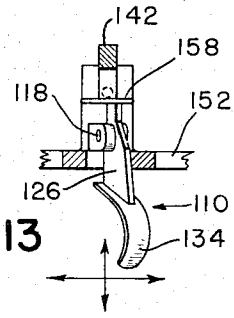


FIG. 13

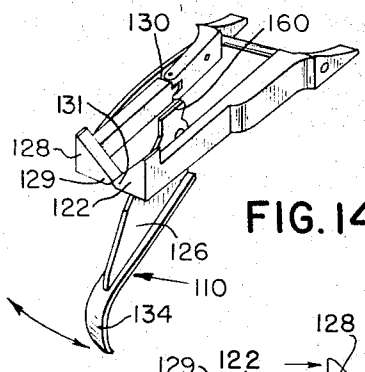


FIG. 14

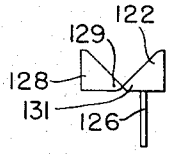


FIG. 15

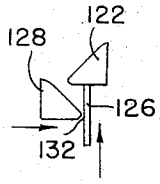


FIG. 16

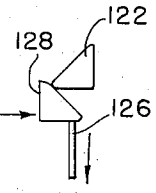


FIG. 17

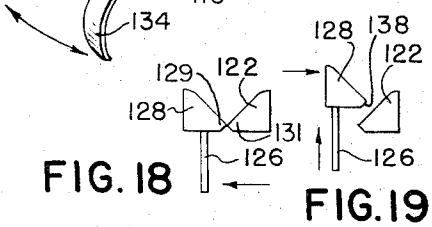


FIG. 18

FIG. 19

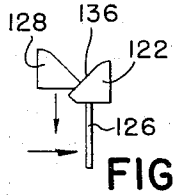


FIG. 20

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SINGLE TRIGGER MECHANISM FOR A DOUBLE-BARRELED SHOTGUN

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Filed Oct. 27, 1965, Ser. No. 505,331

10 Claims. (Cl. 42—42)

ABSTRACT OF THE DISCLOSURE

This invention relates to a mechanism for discharging firearms and more particularly to a single trigger mechanism for use with double-barreled shotguns utilizing a pair of cooperating sear lugs operable with the trigger assembly to fire the weapon selectively.

Background and objectives of the invention

Conventional single trigger mechanism on double-barreled shotguns are conventionally constructed so as to discharge the right barrel initially when the trigger is first pulled. The trigger is then pulled again to discharge the left barrel. Since the respective barrels of many models of double-barreled shotguns are of full caliber and choke caliber bores and usually the right barrel has the full caliber bore while the left barrel has the choke bore, it is highly desirable that the use of a solitary trigger mechanism or assembly have instrumentalities for enabling the selection of the barrel first to be fired, for full caliber bore provides for shooting an object at a less distance from the gun than that for which the choke bore is intended. The latter prevents a spreading of the pellets of the shell upon firing, the resulting reduced dispersion enabling long-range shooting more effectively than with the full caliber bore.

Many designs of single trigger mechanisms for use on double-barreled shotguns are such that it is oftentimes possible and even likely to accidentally fire the second barrel immediately after firing the first since in the excitement of the hunt, the hunter may inadvertently and in rapid succession pull back on the trigger twice, causing an unwanted discharge. Disadvantages from the standpoint of safety and waste are readily apparent.

Accordingly, it is an object of this invention to provide a single trigger mechanism for a double-barreled gun which avoids the possibility of discharging the weapon twice in rapid succession by inadvertently pulling back on the trigger twice before completely releasing the trigger to allow its return to the original firing position.

It is another object of the invention to provide a mechanism of the type described which makes it impossible to fire the second barrel until the trigger has been released and returned to its original pre-fired position following the discharge of the first barrel.

Yet another object of the invention is to provide a mechanism of the type described which has high reliability in selective firing and is simple in construction and durable in operation.

Yet still another object of the invention is to provide a mechanism of the type described which is so constructed as to make it possible for the shooter to choose the barrel to be fired first, that barrel thus becoming the original in the firing sequence, the main functions necessary to the accomplishment of said sequencees being under the direct control of a solitary trigger.

A further object of the present invention is to provide an improved safety mechanism for a single trigger mechanism used with double-barreled shotguns.

Yet a further object of the invention is to provide a single trigger mechanism for a double-barreled gun wherein the particularly constructed sear lugs are so shaped as to permit the second sear to be biased or urged

to an operative position above tthe trigger responsive tripping mechanism after the first barrel of the weapon has been fired.

All of the objects, features and advantages of this invention and the manner of attaining them will become more apparent and the invention itself will be best understood by reference to the following description of various embodiments of the invention taken in conjunction with the accompanying drawings wherein like characters of reference designate corresponding parts throughout the several views.

Figure description

FIG. 1 is a perspective view of a conventional sear operated double-barreled shotgun in the fully assembled position.

FIG. 2 is a combined sectional and elevational view of a portion of a double-barreled shotgun receiver showing the sear-maintained hammer held in the cocked position and the safety linkage locking the trigger in the non-fire position.

FIG. 3 is a combined sectional and elevational view of a portion of a double-barreled shotgun receiver showing the hammer in the uncocked or fired position and also showing the safety linkage in the disengaged position thus permitting free pivotal movement of the lever arm and carried trigger.

FIG. 4 is a fragmented and combined sectional and elevational view of a portion of the receiver of a double-barreled shotgun showing the hammer in the fire or uncocked position and also illustrating the placement of the second or hinged sear embodied in the present invention.

FIG. 5 is a combined sectional and plan view of the first and second sears coacting with their respective hammers and illustrating the position of the lever arm-carried trigger with respect to the integral and hinged sears.

FIG. 6 is a perspective view of the mechanism particularly illustrated in FIGS. 4 and 5 showing the use of an alternative biasing spring for urging the hinged sear and attached lug laterally against the first integral sear.

FIG. 7 is an end elevational diagrammatic view of the first and second sear lugs and their particular relationship to each other and to the trigger-carrying lever arm in the cocked or ready position.

FIG. 8 is an end elevational diagrammatic view of the adjacent sear lugs and their relationship with respect to the trigger-carrying lever arm after the first barel has been fired but before the trigger has been released and returned to its original position.

FIG. 9 is an end elevational diagrammatic view of the relationship between the first and second sear lugs with respect to the trigger-carrying lever arm after the first barrel has been fired and the tigger has been released and returned to its original position and the second sear lug has been urged or biased laterally to a position above the trigger lever arm in readiness for discharge of the second barrel.

FIG. 10 is a fragmented combined sectional and elevational view of a portion of a double-barreled shotgun receiver showing an alternative embodiment of a single trigger mechanism for double-barreled shotguns and an alternatively fashioned safety device cooperating therewith.

FIG. 11 is a fragmented combined sectional and partial plan view of the alternative single trigger mechanism illustrated in FIG. 10 showing the biasing spring for maintaining the swivel trigger assembly in a normal sear-engaging position.

FIG. 12 is a fragmented combined sectional and plan view of the alternative single trigger mechanism illustrated

in FIG. 10 showing the biasing spring for maintaining the swivel trigger assembly in a normal sear-engaging position.

FIG. 13 is a sectional view taken along the line **13—13** of FIG. 12 showing the trigger assembly in the normal cocked position but available for lateral movement in accordance with the particular barrel desired to be fired.

FIG. 14 is a perspective view of the alternative embodiment of a single trigger mechanism for double-barreled shotguns utilizing a laterally movable or swiveled trigger assembly to selectively fire either barrel of the weapon and illustrating the hinged and biased left sear and its relationship to the integral first or right sear of the weapon.

FIG. 15 is an end elevational diagrammatic view of the sear lug relationship of the alternative embodiment disclosed in FIGS. 10 through 14 when the trigger lever arm is in position to discharge the right barrel of the weapon.

FIG. 16 is an end elevational diagrammatic view of the sear relationship as the trigger discharges the first or right barrel by elevating the first or right sear.

FIG. 17 is an end elevational diagrammatic view of the sear relationhsip of the alternative embodiment of a single trigger mechanism for a double-barreled weapon shown in FIGS. 10 through 14 illustrating the lateral movement of the left or hinged sear to an operative position above the trigger tripping lug once the trigger has been released and returned to its original position after the firing of the first barrel.

FIG. 18 is an end elevational diagrammatic view showing the sear relationship when the swivel trigger assembly has been selectively moved to discharge the left or hinged sear-controlled barrel initially.

FIG. 19 is an end elevational diagrammatic view of the sear relationship showing the elevated left sear when the trigger assembly has discharged the left barrel of the weapon.

FIG. 20 is an end elevational diagrammatic view of the sear lug relationship after the left barrel of the weapon has been discharged and the swivel trigger assembly has been laterally moved to be operatively positioned beneath the right sear lug for subsequent firing of the right barrel of the weapon.

Detailed description

Referring now to the drawing and particularly to FIG. 1, there is shown a double-barreled shotgun generally designated **22** having a stock **24**, a trigger **26**, and horizontally disposed barrels **28**, all of which are of conventional make and manufacture. A trigger grip area **30** houses internally a receiver portion generally designated **32** (FIG. 2), and it is within this portion that the present invention has application.

Receiver portion **32** contains within the upper wall **34** and the lower wall or tang **36** the coking and firing assembly for conventionally operated shotguns. A spring **38** engages a hammer **40**, one of which is provided to discharge each of the shotgun barrels **28**, so that when the weapon is cocked or breached, a sear **42** coacts with a notch or ridge **44** on the lower extremity of hammer **40** to retain the hammer in a cocked position as spring **38** is compressed and held under pressure. Hammer **40** is positioned to strike a firing pin **46** upon the disengagement of the flange **48** of sear **42** with notch or ridge **44**. Sears **42** and **50** are pivoted independently about a common axis **52** so that they may be pivoted or actuated by the operation of the trigger assembly generally designated **54** which will be subsequently described in greater detail.

Rearwardly extending trigger-engaging arms **61** and **63** of sears **42** and **50** each have generally upstanding lugs **56** and **58** which comprise novel structural and operational features subsequently to be described in relation to the operation of the trigger assembly **54**, and each of the sears **42** and **50** have forwardly extending hammer-engaging flanges **48** and **57**. Arms **61** and **63** also carry sear-displacing cams **65** and **67** which cooperate in a manner to be described subsequently. Sear **50** is hinged **60** intermediate its length and is biased laterally to constantly press against sear **42** by means of a leaf spring **62** or a conventional coil spring **64** (FIG. 6) to maintain sear arm cams **65** and **67** which are integral with lugs **56** and **58** in a constant engaging relationship each with the other.

Trigger assembly **54** includes a lever arm **66** having an integrally connected contoured trigger **68** appended thereto for shooter operation. Assembly **54** is constantly urged downwardly in a cocked or pre-shoot condition by means of a leaf spring **70** held to the lower wall or tang **36** of the gun receiver portion **32** by means of a securing lug **72**.

The operation of the sear lugs **56** and **58** are sequentially portrayed in FIGS. 7 through 9. Essential to this operation is the particular cross-sectional configuration of each of these lugs, for lug **58** has a cross-sectional configuration substantially resembling a triangle while the cam **65** of lug **56** has been diminished along the lower angular tip **74**, a structural necessity that will be obvious as the lug cooperation is subsequently explained. The upper edge **76** of lever arm **66** normally rests lightly against the lower edge of lug **56** when the weapon is in the cocked or ready position. In the preferred embodiment of the present inventive concept, trigger assembly **54** is always maintained beneath the right sear lug **56** and does not possess laterally movable characteristics as will be disclosed in an alternative embodiment. When lugs **56** and **58** are in the cocked position as shown in FIG. 7, both coacting hammers are spring loaded and maintained in the cocked position as was illustrated in FIG. 2 by the cooperation between flange **48** of sear **42** and notch **44** of hammer **40**.

When trigger **68** is pulled back or displaced by the shooter, the upper edge **76** which constitutes the trip portion of lever arm **66** rides against lug **56** and elevates that lug and its cooperating sear **42** to release hammer **40** for subsequent impact with firing pin **46** and the resulting discharge of the right barrel of the weapon. Note that lug **58** is maintained in its original position since cam **67** integral with that lug engages the side **80** of lever arm **66**. Lug **58**, by virtue of its biased hinged configuration as shown in FIG. 6, is constantly urged laterally against the side **80** of lever arm **66** but so long as the trigger assembly **54** is in the displaced or pulled position, cam **67** integral with lug **58** cannot move laterally to the right.

After the right barrel of the weapon has been discharged and the trigger released, the biasing action of leaf spring **70** returns the trigger to its original position and moves it downwardly (see arrow in FIG. 9) so that the side **80** of lever arm **76** is lowered sufficiently to allow lug **58** to move laterally across and above that lever arm and become operative for firing the left barrel of the weapon upon subsequent trigger displacement by the shooter. Lug **56** and its supporting sear **42** is maintained in the elevated position to allow the lateral movement of lug **58** across and beneath lug **56** by means of a larger than normal ridge **82** formed along the lower arcuate surface of hammer **40**. Note that only the right hammer possesses this enlarged bump or ridge since there is no necessity to retain the left sear **50** and its connected lug **58** in an elevated position once the second or left barrel of the weapon has been fired. Thus the hammer (not shown) coacting with sear **50** need not possess this enlarged ridge or bump since it would serve no purpose. Breaching or cocking the weapon will reposition the lugs **56** and **58** in their cocked position as illustrated in FIG. 7.

The preferred embodiment of the present invention possesses a unique and novel safety mechanism generally designated **84** which is comprised of a safety linkage **86** slidably retained in registry by means of a cylindrical shaft **88** passing through an accommodating aperture **90** of a pedestal or stanchion **92** secured to the lower wall **36** of receiver portion **32**. The rearward portion **94** of

linkage **86** is also held in registry by an elongated opening **96** which receives a pin **98** extending through lug **72**. Lever arm **66** carries a substantially flat extending lug **100** positoned beneath a pin **102** secured to linkage **86**, and when linkage **86** is positioned in a position to preclude firing of the weapon through any barrel, lug **100** falls directly beneath pin **102** and will not permit the pivotally mounted trigger assembly **54** to be moved or displaced by a pull on trigger **68** by a would-be shooter.

When linkage **86** is shifted forwardly to disengage pin **102** with lug **100**, a curved indenture **104** in the trigger assembly **54** allows the trigger assembly to be elevated when the shooter displaces the trigger **68** as he attempts to fire the weapon. Since the trigger displacement causes the operation of sear lugs **56** and **58** as was discussed and described in FIGS. 7 through 9, the weapon will fire as previously shown, and this forward position of linkage **86** is known as the off or fire position.

A slidably secured safety button **106** is disposed on the exterior side of upper receiver wall **34** for convenient shooter control in a crimped leaf spring **108** provides positive securement of the safety mechanism **84** in either the on or off position.

An alternative embodiment of the present invention is disclosed in FIGS. 10 through 20 and comprises a laterally movable trigger assembly **110**, that lateral movement permitted by the provision of an accentuated slot **112** within the lower wall of the shotgun receiver portion **114**. The trigger assembly is movable about a pivot point or stud **116** and can be displaced vertically about pivot point **118**. The trigger in this embodiment is always maintained in the fire or lowered position by means of a coil or helical spring **120** which becomes compressed when the trigger is pulled or elevated and which will force the trigger to rotate about pivot point **118** when the operator has released it.

Operationally, trigger assembly **110** is always maintained in a position to initially engage the right sear lug **122** by means of a biasing leaf spring **124** secured rearwardly in the butt structure. Spring **124** merely presses against the side of lever arm **126**, and the force of this spring pressure can be easily overcome by the selective firing of a shooter which will be described subsequently.

The operation and cooperation of the sears **122** and **128** are sequentially illustrated in FIGS. 15 through 17 for first the selective firing of the right barrel and in FIGS. 18 through 20 for the selective firing of the left barrel. If the shooter desires to fire the right barrel initially, since the trigger assembly is normally retained beneath the right sear lug **122**, the shooter need only displace the trigger thus raising sear **122** and discharging the right barrel. Since the cam **129** integral with sear lug **128** is constantly biased against the cam **31** integral with sear lug **122** by reason of the spring forced hinged sear **130**, lug **128** will move laterally beneath lug **122** and against the side **132** of lever arm **126**, assuming the lever arm **126** and its carried trigger have not been released by the shooter. As soon as trigger **134** is released, it is biased to its original position by spring **120** thus allowing the passing of lug **128** thereover and the positioning that lug operatively for the subsequent firing of the left barrel. The sequential operation of the sear lugs should the operator desire to fire first the right and then the left barrel of the shotgun is essentially the same as that disclosed in the preferred embodiment of this concept.

Should the shooter desire to fire the left barrel first, he need only swivel or laterally move trigger assembly **110** to the left and position it under sear lug **128** as shown in FIG. 18 and then displace the trigger to fire the left barrel. Upon the discharge of that barrel, lug **128** moves laterally (see arrow in FIG. 19) to the right and the cam **129** engages the beveled or slanted surface **136** of sear lug **122**, a contact which is smoothly made by reason of the beveled tip **138** of cam **129**. The operator then need only displace the trigger a second time to discharge the right barrel since spring **124** normally biases the trigger assembly **110** back to its original position beneath sear lug **122**.

An alternative embodiment of a safety mechanism **140** is disclosed in FIG. 10 and comprises a safety linkage **142** of a slightly elongated nature which is also maintained in slidable registry by means of an aperture **144** within a pedestral **146** which cooperatively receives a circular shaft **148** integral with linkage **142**. An additional lug **150** is secured to the bottom wall **152** to support a pin **154** that is slidably received within an elongated aperture **156** of linkage **142**. As is shown in FIG. 10, lug **150** can also be used to support spring **124** which biases trigger assembly **110** to a normal right sear-engaging position. A flange or plate **158** is integrally secured to linkage **142** and is maintained perpendicular thereto to provide a surface of sufficient width to continuously engage upper edge **160** of lever arm **126** regardless of which position that trigger assembly is placed. Thus the safety mechanism **140** will preclude firing of either barrel of the weapon even if the trigger assembly is laterally moved from its outermost limits because of the width of flange **158**. A conventional latch (not shown) mounted on the upper surface (not shown) of the receiver portion is contemplated for slidably positioning safety mechanism **140**.

Thus there has been described unique and novel embodiments of a single trigger mechanism for double-barreled guns which overcome many of the disadvantages heretofore found in conventional trigger assemblies. There has also been described embodiments of a unique and novel safety feature for use with single trigger mechanisms of double-barreled weapons that have been heretofore unknown in the art. Obviously, many modifications and variations may be made in the construction and arrangements of the sears and lugs as well as the safety linkages and biasing means as well as the other phases of the present inventive concept in the light of the above teachings without departing from the real spirit and purpose of this invention. Such modifications and alternatives as well as the use of mechanical equivalents as those herein illustrated and described are reasonably included and modifications are contemplated.

I claim:

1. A trigger mechanism for a double-barreled shotgun having a single trigger for actuating two independently operable hammers comprising a receiver portion, a trigger having a sear lug-engaging arm pivotally mounted in said portion, first and second sears pivotally mounted and laterally spaced from each other in said portion, each of said sears carrying a forwardly extending hammer-engaging flange and a rearwardly extending trigger-engaging arm, each of said sear-carried trigger-engaging arms having a trigger-engaging lug and a sear-displacing cam mounted thereon, the first sear-carried trigger-engaging arm being laterally displaceable toward the second sear-carried arm, and means normally urging said displaceable sear-carried trigger-engaging arm laterally toward said second sear for cooperative engagement between said cams to position said displaceable arm lug in the path of trigger displacement after actuation of the second sear-carried trigger-engaging arm and displacement thereof.

2. A trigger mechanism according to claim **1**, said laterally displaceable arm being articulated forming a forward portion and a rear portion hingedly connected together intermediate the length of said laterally displaceable arm.

3. A trigger mechanism according to claim **1** including means selectively restraining said trigger engaging arms from pivotal movement to preclude sear displacement and the subsequent discharge of said barrels.

4. A trigger mechanism according to claim **2**, said sear lug-engaging arm being selectively shiftable laterally and positionable beneath said second sear to actuate said second sear initially.

5. A trigger mechanism according to claim **1**, said

urging means biasing said first sear-carried trigger-engaging lug to an operative position above said trigger sear lug-engaging arm upon the release of said trigger after the actuation of said second sear and the resulting discharge of one barrel of the gun.

6. A trigger mechanism according to claim 2 including means selectively restraining said trigger-engaging arms from pivotal movement to preclude sear displacement and the subsequent discharge of said barrels.

7. A trigger mechanism according to claim 1, said second sear-displacing cam being responsive to the pivotal movement of said trigger sear lug-engaging arm and said second trigger-engaging lug being in operative position beneath the lug of said first sear to elevate and actuate said first sear when said trigger is displaced; and means selectively restraining said trigger from movement to preclude displacement and subsequent actuation of said sears.

8. A single trigger mechanism for double-barreled guns having two hammers and a single trigger comprising: a first and second sear coacting with their respective hammers, said sears each having an upstanding lug movable therewith; a trigger arm carrying said trigger

at one end, said trigger arm being swingably retained between said sears for longitudinal pivotal movement with respect to said gun; trip means responsive to the pivotal movement of said trigger arm, said trip means being in operative position beneath said second sear lug; means biasing said first sear lug laterally against said second sear lug and urging said first sear lug to an operative position above said trip means upon the release of the trigger after the actuation of said second sear and the resulting discharge of one barrel of the gun.

9. A single trigger mechanism according to claim 8, said trigger arm being selectively shiftable laterally and positionable beneath said first sear lug to actuate said first sear initially and discharge the other of said barrels.

10. A single trigger mechanism according to claim 9 including means selectively restraining said trigger arm from pivotal movement to preclude the displacement of said sears and the subsequent discharge of said barrels.

No references cited.

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