Dec. 7, 1965 K. R. LEWIS 3,221,433

FIREARM CRANE AND TRIGGER CONSTRUCTION

Original Filed Nov. 23, 1960

FIG. 1

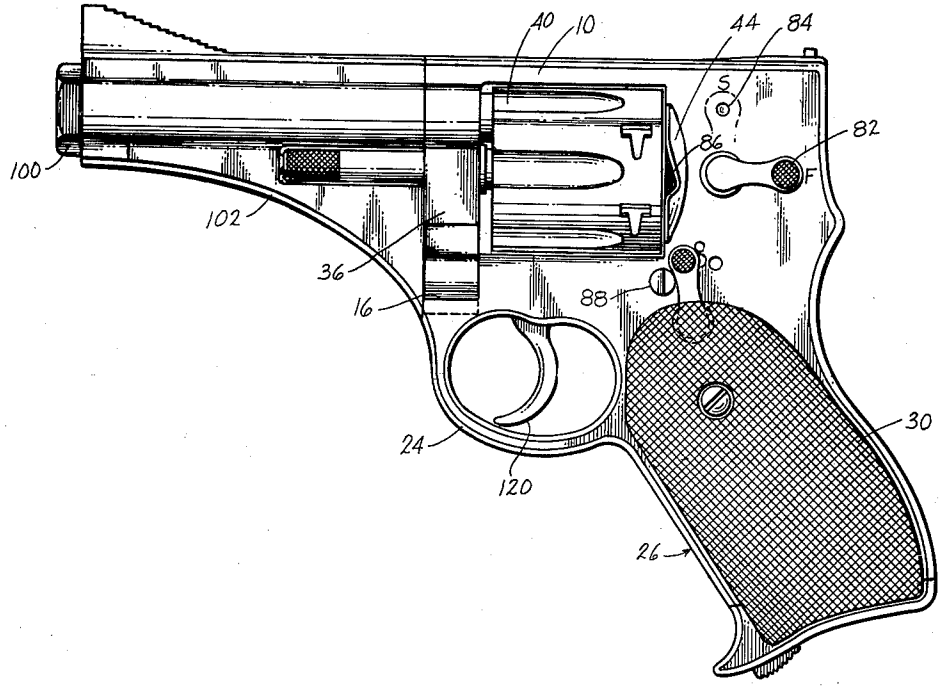
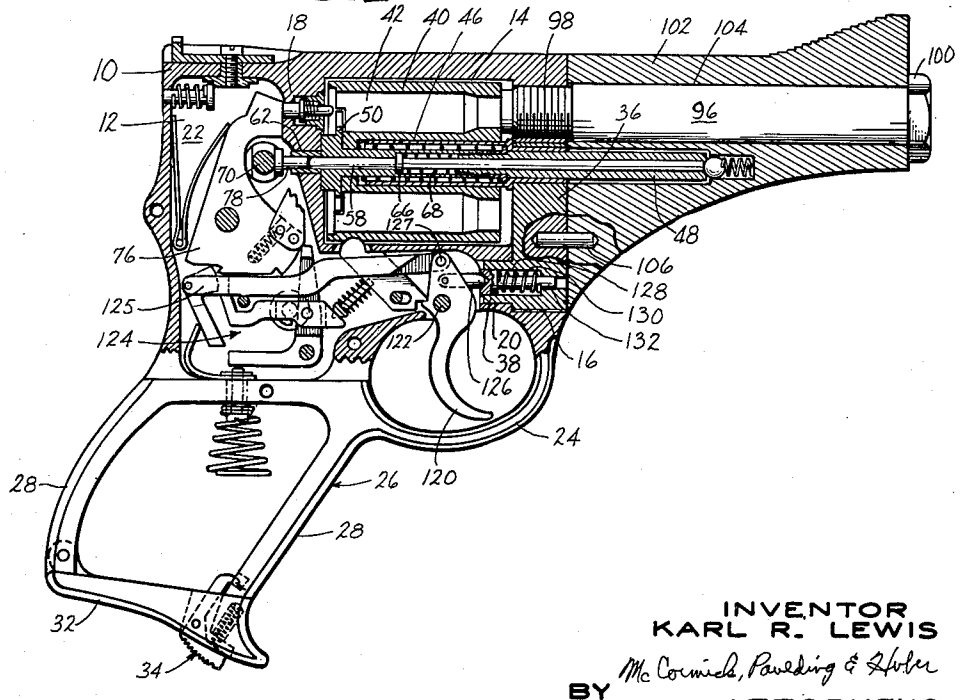


FIG. 2



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United States Patent Office 3,221,433 Patented Dec. 7, 1965

3,221,433

FIREARM CRANE AND TRIGGER CONSTRUCTION

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Original application Nov. 23, 1960, Ser. No. 71,339, now Patent No. 3,163,951, dated Jan. 5, 1965. Divided and this application Nov. 13, 1964, Ser. No. 410,965
5 Claims. (Cl. 42—62)

This application is a division of my co-pending application Serial No. 71,339, filed November 23, 1960, for "Firearm Firing Mechanism," now Patent No. 3,163,951. The invention with which this application is concerned relates to firearms, and deals more particularly with improvements in the construction of small firearms of the revolver type.

The general object of this invention is to provide in a firearm of the revolver type an improved construction of the cylinder crane and trigger resulting in a saving of space and economies in the manufacture and assembly of the parts of the firearm.

A more particular object of the invention is to provide a biasing means for the trigger of a revolver type firearm which biasing means is completely or almost completely received in a bore formed in a part of the cylinder crane which is in turn pivotally supported by the frame of the firearm.

Other objects and advantages of the invention will be apparent from the following description and from the drawing forming a part hereof.

The drawing shows a preferred embodiment of the invention and such embodiment will be described, but it will be understood that various changes may be made from the construction disclosed, and that the drawing and description are not to be construed as defining or limiting the scope of the invention, the claims forming a part of this specification being relied upon for that purpose.

Of the drawing:

FIG. 1 is a side view of a firearm embodying the present invention; and

FIG. 2 is a side view of the firearm shown in FIG. 1 with the upper portion thereof being shown in vertical longitudinal section and with the lower portion being shown in elevation with the grip pieces removed from the frame.

Referring now to the drawing and first particularly considering FIGS. 1 and 2, there is shown a firearm embodying the invention and of the revolver pistol type. The firearm comprises a frame **10** which is provided with a mechanism cavity **12**, a cylinder recess **14** and a crane recess **16** in the upper portion thereof. Between the mechanism cavity **12** and the cylinder recess **14** is a transverse or intermediate wall **18**, and a longitudinal bore **20** extends between the crane recess **16** and the mechanism cavity **12**. The mechanism cavity **12** has one side wall **22** which is integral with the other portions of the frame. The outer surface of this wall is shown facing the viewer in FIG. 1. The other side wall of the mechanism cavity is provided by a removable side plate, not shown, which is attached to the side of the frame facing the viewer in FIG. 2 by means of screws or other fasteners. Removal of the side plate provides access to all of the parts of the firing mechanism shown in FIG. 2.

The lower portion of the frame includes a trigger guard **24** of conventional configuration and a depending grip portion **26** located rearwardly of the trigger guard. As shown in FIG. 1, the grip portion of the frame comprises two generally downwardly extending arms **28, 28** that are spaced apart longitudinally of the frame. The arms **28, 28** have attached thereto, two side pieces, one of which is shown at **30** in FIG. 1, which are located one on either

side of the frame and which are preferably made of wood or plastic. These side pieces, together with the grip portion of the frame, constitute the grip of the firearm, the grip being hollow to provide a storage chamber for holding extra cartridges or other articles. Access to the storage chamber is provided by a pivotal floor plate **32**, as shown in FIG. 2, which is pivotally connected adjacent its rear end to the grip portion **26** and which at its forward end is provided with a releasable latch **34**. The latch **34** normally holds the floor plate in closed position with respect to the storage chamber and is manually operable by a thumb or finger to release the floor plate for swinging movement away from the grip portion.

A crane **36** is attached to the frame **10** for outward swinging movement about an axis extending longitudinally of the frame. This mounting of the crane to the frame is obtained by providing the crane with a pivotal portion **38** which is loosely received by the longitudinal frame bore **20**. As viewed in FIG. 1, the crane **36** is swingable outwardly about the axis of the longitudinal bore **20** in a direction toward the viewer from the position shown. Swinging movement of the crane in a direction away from the viewer in FIG. 1 is limited by engagement of the crane with the side wall of the crane recess. This side wall is not shown in FIG. 1, but is located immediately behind the crane and is integral with the frame.

A cylinder **40** of somewhat conventional construction is rotatably secured to the crane for rotation about an axis extending longitudinally of the firearm. Normally, the cylinder **40** is positioned within the cylinder recess **14** as shown in FIGS. 1 and 2, but it is swingable outwardly therefrom with the crane **36** in order to displace the cylinder to an open position located to one side of the frame for loading and ejecting purposes. The cylinder **40** includes a plurality of cartridge receiving chambers **42, 42** which are shown empty in FIG. 2. When the cylinder is in its normal position, the intermediate wall **18** of the frame and the flanges **44, 44**, one of which is formed on either side of the frame behind the cylinder, at least partially close the rear ends of the cartridge chambers **42, 42** to prevent the addition or removal of cartridges to or from the chambers; however, when the cylinder is swung outwardly from the frame, the rear ends of the cylinder cartridge chambers are positioned away from the wall **18** and the adjacent flange **44** so that cartridges may be removed or added.

The cylinder **40** is rotatably secured to the crane **36** for rotation about an axis extending longitudinally of the frame. The particular means for mounting the cylinder to the crane forms no part of this invention and therefore is not described in detail herein. The mounting means illustrated in FIG. 2 are, however, so described in my above-referred to co-pending application and reference may be made thereto for a more complete understanding of the same, if desired.

The cylinder **40** is normally held in the closed position illustrated in FIGS. 1 and 2 by means of a cylinder bolt **58** which has a rearward portion slidably received in the bore of a cartridge extractor **50** and in the bore of a sleeve **62** fitted into the intermediate frame wall **18**, and a forward portion slidably received in the bore of an ejector rod **48**. The cylinder bolt **58**, as shown in FIG. 2, includes an integral collar **66** which is normally held in the rearward position shown by a spring **68**. A means provided for moving the cylinder bolt **58** forwardly to unlock the cylinder from the frame for outward swinging movement thereof comprises a cam element **70** that is pivotally connected to the frame **10** for pivotal movement about a transverse axis between active and inactive positions. On its periphery, the cam element **70** has two closely spaced faces and two widely spaced faces. In its

inactive position, the cam element **70** is positioned as shown in FIG. 2 so that one of the closely spaced faces engages a cylinder bolt release member **78** which has its forward part positioned in the sleeve **62** and in engagement with the rear end of the cylinder bolt **58**, the cylinder bolt **58** under the action of its bias urging the cylinder bolt release member **78** rearwardly and into engagement with the cam element **70**. The cam element **70** is moved to an active position by rotating it approximately 90° about its transverse axis from the position shown in FIG. 2. This brings one of the widely spaced faces into such position as to hold the cylinder bolt release member **78** in a forward position at which the cylinder bolt **58** is held out of the sleeve **62** so that the cylinder is freed for lateral swinging movement. Movement of the cam element **70** from its active to its inactive position is produced by manual operation of a lever **82** located on the outside surface of the firearm as shown in FIG. 1, the latter being connected with the cam element **70** which extends through the side wall **22** of the mechanism cavity **12**. With the lever **82** in the position marked F as shown in FIG. 1, the cam element **70** is disposed in its FIG. 2 position while with the lever in the position marked S in FIG. 1, as shown by the broken lines, the cam **70** is in a position at which the cylinder bolt is shifted forwardly and released from the frame to permit lateral outward movement of the cylinder. At both the S and F positions of the lever **82** the frame **10** is provided with an indent, such as shown at **84** in FIG. 1, which cooperates with the lever to releasably hold it in the position to which it is moved.

Referring to FIG. 1, it will also be noted that the flange **44** located on the side of the frame from which the cylinder **40** swings is provided with a cam surface **86** which engages the rear end of the cylinder bolt **58** and cams the same forwardly as the cylinder is swung from its open position back to its normal closed position. When the cylinder is in its open position, it is held in place on the sleeve **46** by a blocking element **88** which is connected with the frame and has a forwardly facing surface that abuts the rear face of the cylinder to restrain its rearward movement.

The barrel **96** of the firearm is located in front of the cylinder **40** and has a threaded rear portion **98** which is received in a corresponding threaded opening in the frame **10**. The barrel, of course, is so located with respect to the frame and the cylinder **40** that the longitudinal axis of its bore is in alignment with the longitudinal axis of the upper or active chamber **42**. The forward end of the barrel **96** is provided with a radially outwardly extending flange **100**. A shroud **102** surrounds the barrel **96** and extends substantially the entire length of the barrel from the forward end face of the frame to the barrel flange **100**. The shroud **102** has a bore **104** for receiving the barrel which bore conforms closely to the outside surface of the barrel, but with a sufficiently loose fit existing between the barrel and the shroud as to permit the barrel to slide longitudinally and angularly of the shroud during assembly or disassembly of the firearm. The shroud **102** is held longitudinally in place on the barrel by means of engagement with the forward face of the frame **10** at its rear end and by means of engagement with the barrel flange **100** at its other end. Angular displacement of the shroud with respect to the frame is prevented by means of a locking pin **106** which extends between the frame and the shroud and which is preferably located below the barrel as shown in FIG. 2. In FIG. 2, the partial section illustrating the locking pin **106** is taken on a plane located in front of or closer to the viewer than the plane on which the remainder of the view is taken.

The firing mechanism of the firing arm is located in the mechanism cavity **12** and is described in detail in my above-referred to co-pending application to which reference is made for a more detailed description thereof. For the present, it is sufficient to note that in addition

to the hammer **76** the mechanism includes a trigger **120** which is supported for pivotal movement relative to the frame **10** by a pivot pin **122**. The lower or finger engageable portion of the trigger **120** is movable in a conventional manner between forward and rearward positions relative to the frame, and connected with the hammer is a means, indicated generally at **124** for controlling the movement of the hammer in response to the movement of the trigger. This means in turn includes a trigger bar **125** pivotally connected by a pivot pin **127** with a portion of the trigger extending upwardly beyond the pivot pin **122**. The trigger is biased in the counterclockwise direction, as viewed in FIG. 2, so that the lower portion thereof is normally held in the forward position illustrated.

In accordance with the invention, the aforesaid bias for the trigger is provided by a biasing means located substantially entirely in the pivotal portion **38** of the cylinder crane **36**. As shown, this means comprises a connecting pin **126** which is pivotally connected at its rear end to the upper portion of the trigger **120** and which extends forwardly into or at least toward a bore **128** formed in the pivotal portion **38** of the crane **36**. As shown, the bore **128** includes a large diameter rear portion and a smaller diameter forward portion. In the rear portion of the bore **128** is a helical compression spring **130** and the major portion of a spring guide **132**, the spring guide engaging the forward end of the connecting pin **126** and urging it rearwardly under the influence of the spring. The spring guide **132** includes an enlarged head at its rear end which is slidably received in the enlarged portion of the bore **128** and a smaller diametered stem which extends forwardly through the center of the spring **130** to prevent the spring from buckling or bending in the transverse direction. At its forward end, the stem is slidably received in the smaller diametered portion of the bore **128**. The enlarged head of the spring guide has a forward face which abuts the spring **130** and a rear face which abuts the connector pin **126**, the latter face preferably being provided with a depression or indent for receiving the forward end of the connector, as illustrated. The spring **130** and the connector pin therefore function to normally hold the lower portion of the trigger in the illustrated forward position and to oppose its movement to the rear. Accordingly, the trigger bias means is accommodated in the otherwise unused space occupied by the crane pivotal portion **38** and provides a compact, reliable and easily assembled construction for the firearm.

The invention claimed is:

1. The combination in a revolver type firearm of: a frame having a mechanism cavity, a cylinder recess, a crane recess, and a longitudinal bore extending between said mechanism cavity and said crane recess; a crane having a pivot portion loosely received by said longitudinal frame bore for pivotally supporting said crane for swinging movement into and out of said crane recess, said pivot portion of the crane having a longitudinal bore therein which bore communicates with said mechanism cavity; a cylinder attached to said crane and swingable therewith into and out of said cylinder recess; a trigger having an upper portion located in said mechanism cavity rearwardly of said frame bore and a lower portion extending out of said cavity and adapted for engagement with a finger of a person holding the firearm, said trigger being pivotally movable relative to said frame; a member pivotally connected to said trigger and extending forwardly therefrom into said crane bore; and spring means housed in said crane bore which spring means engages said member and biases the same so as to oppose rearward movement of the lower trigger portion and which serves to return said lower trigger portion to a forward position after such rearward movement.

2. The combination in a firearm of: a frame having a mechanism cavity and a longitudinal bore communicating with said cavity, a crane having a pivot portion loosely received by said longitudinal frame bore so as to be pivot-

ally supported relative to said frame, said pivot portion of said crane having a bore therein which communicates with said mechanism cavity, a trigger pivotally movable relative to said frame which trigger includes an upper portion located in said mechanism cavity rearwardly of said crane bore and a lower portion adapted for engagement with a finger of a person holding the firearm, a member connected to said upper portion of said trigger and extending forwardly therefrom toward said crane bore, and spring means housed in said crane bore which spring means engages said member and biases the same so as to oppose rearward movement of said lower trigger portion and which serves to return said lower trigger portion to a forward position after such rearward movement.

3. The combination defined in claim 2 further characterized by said crane bore including an enlarged diameter rear portion and a smaller diameter forward portion, and spring means comprising a spring guide having an enlarged head slidably received in said enlarged portion of said crane bore and a stem portion extending forwardly from said head and into said smaller diametered portion of said crane bore, and a spring surrounding said stem portion of said guide.

4. The combination defined in claim 3 further characterized by said member connected to said trigger being

pivotally connected at its rear end to said trigger and at its forward end directly engaging said enlarged head of said spring guide, said spring guide having an indent for at least partially receiving the forward end of said member.

5. The combination in a firearm of: a frame, a firing mechanism associated with said frame and including a trigger pivotally connected with said frame for movement between first and second positions relative to said frame, a crane pivotally connected with said frame and including a pivot portion having a bore therein facing said trigger, a member connected with said trigger and extending toward said crane pivot portion bore, and spring means housed in said crane pivot portion bore which spring means engages said member and biases the same so as to oppose movement of said trigger from its first to its second position.

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