United States Patent

[11] 3,628,278

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[54] **REVOLVER CYLINDER CRANE LATCH MECHANISM**
8 Claims, 7 Drawing Figs.

[52] **U.S. Cl.** **42/62,** 42/65
[51] **Int. Cl.** **F41c 1/00**
[50] **Field of Search** 42/62, 59, 65, 68

[56] **References Cited**
UNITED STATES PATENTS

3,221,433	12/1965	Lewis	42/62
573,736	12/1896	Wesson et al.	42/62
3,387,399	6/1968	McClenahan	42/62

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ABSTRACT: The cylinder of a revolver rotatably mounted on a cylinder crane is retained in its closed or firing position by a spring-pressed crane latch plunger that engages an opening formed in the frame of the revolver. A crane latch release lever is pivotally mounted on the frame for rotation in a horizontal plane that coincides with the axis of the rotation of the cylinder, the crane latch release lever disengaging the crane latch plunger when rotated forwardly against the rearward end of the plunger. The crane latch release lever also may cooperate with the cylinder-actuating pawl to prevent the cylinder from being moved from its closed position to its open position when the revolver is cocked and to prevent the revolver from being cocked when the cylinder is in its open position.

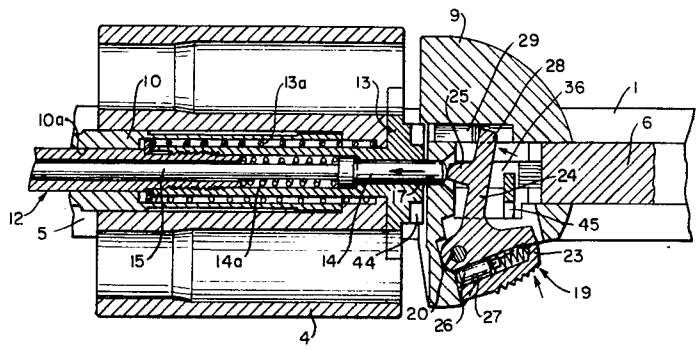

FIG. 1

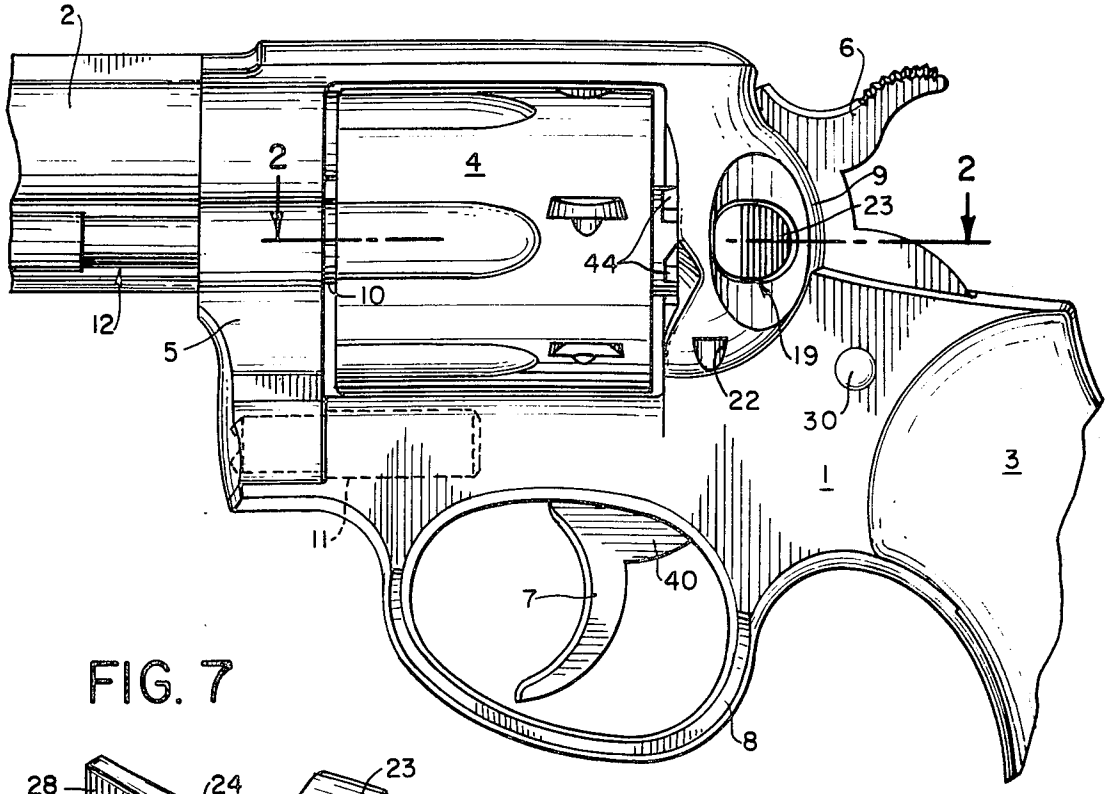

FIG. 7

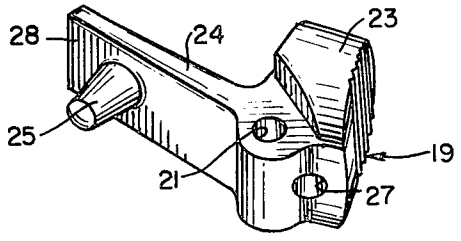

FIG. 2

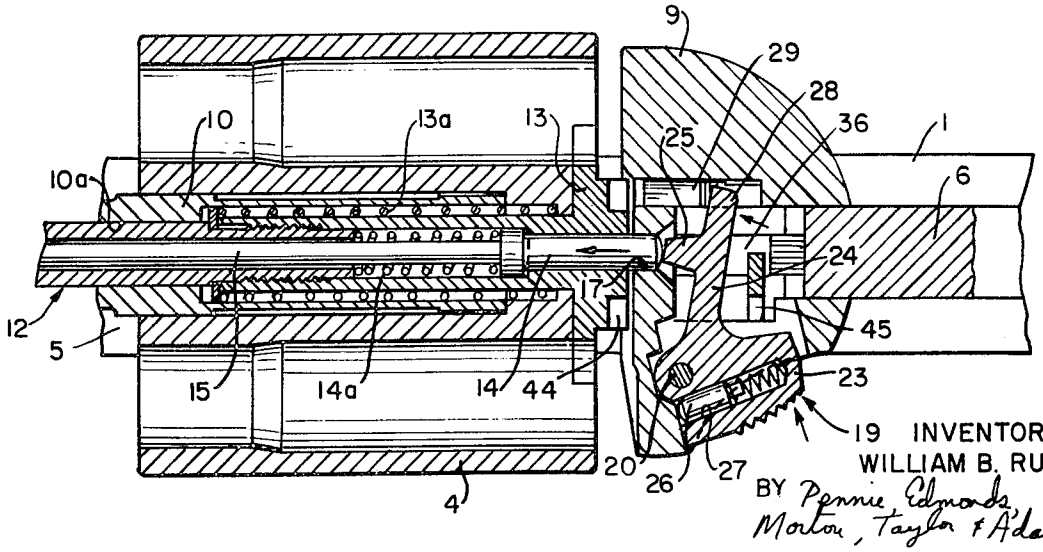

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FIG. 3

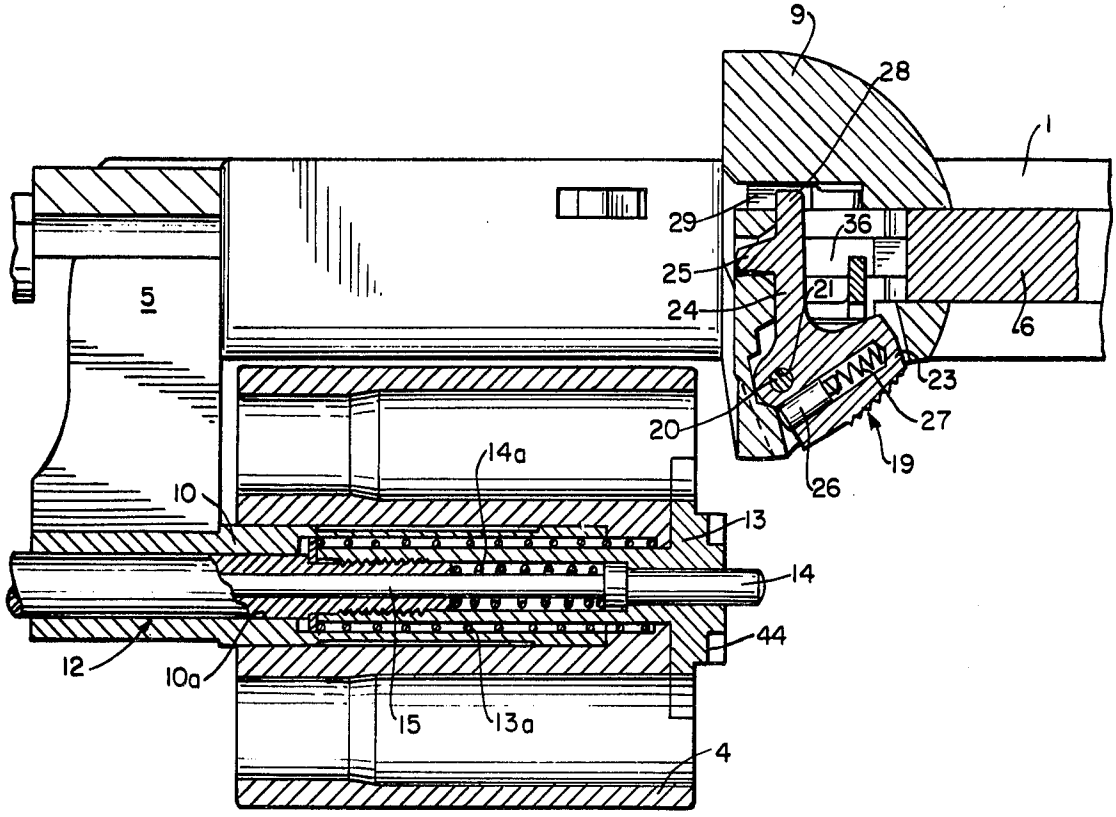

FIG. 4

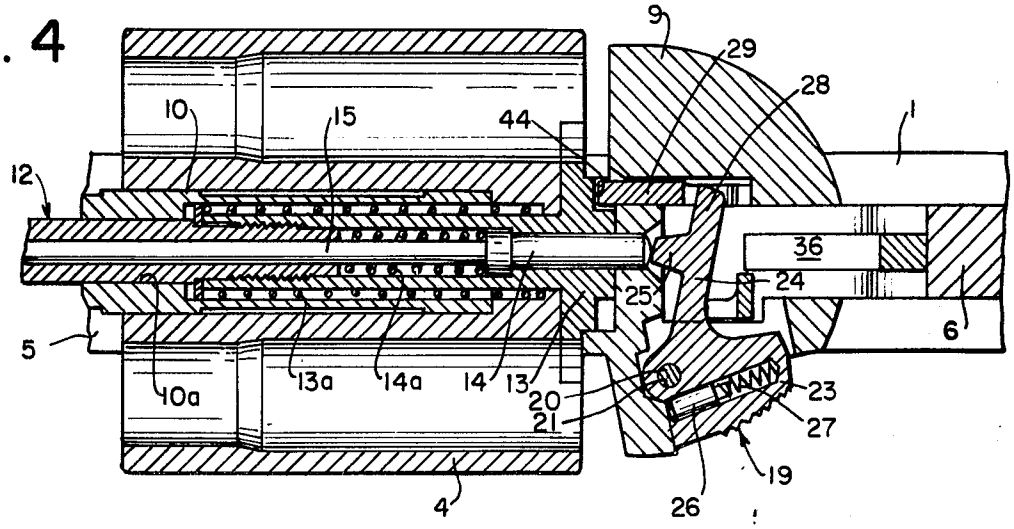

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FIG. 5

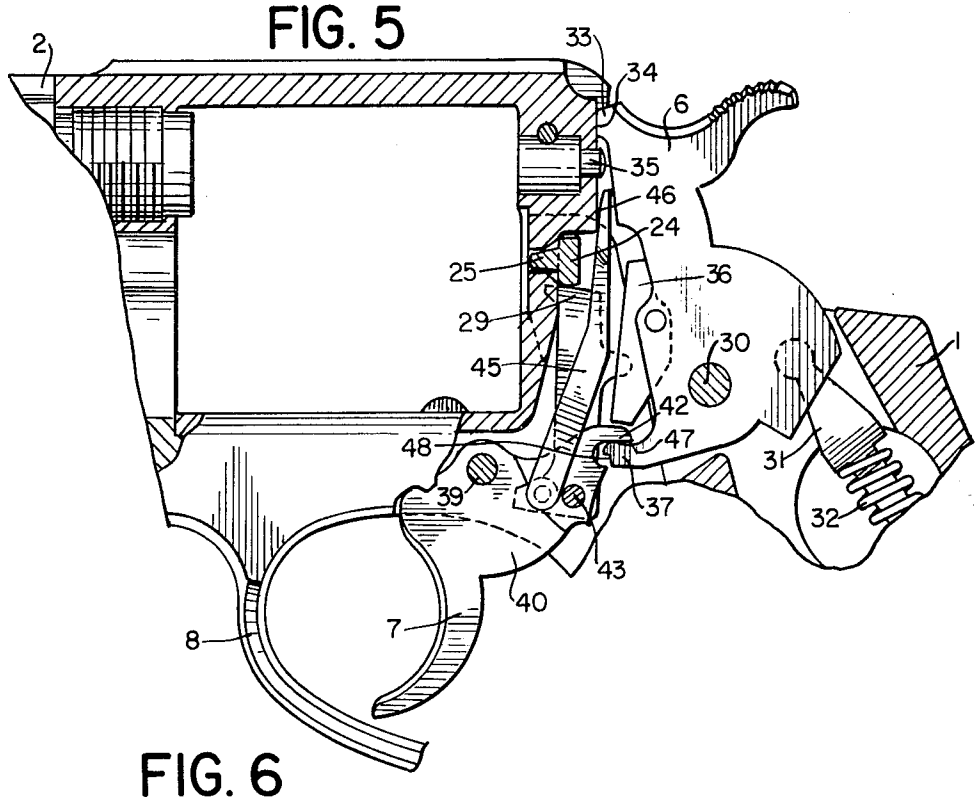
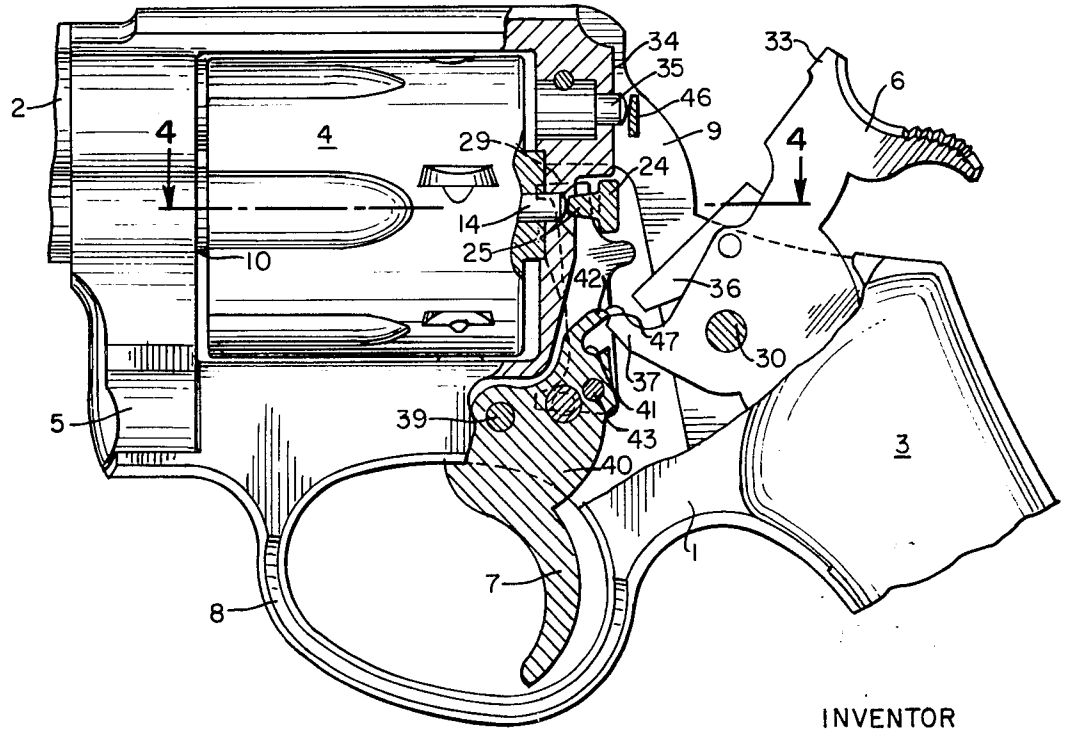


FIG. 6



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REVOLVER CYLINDER CRANE LATCH MECHANISM

BACKGROUND OF THE INVENTION

1. Field of the Invention

This invention relates to revolvers and in particular to cylinder crane latch mechanisms for revolvers.

2. Prior Art

Conventional revolvers include a revolver frame, a cylinder, a cylinder crane having a cylinder pivot shaft on which the cylinder is rotatably mounted and a crane pivot shaft by means of which the cylinder crane is pivotally secured to the frame, a hammer, a trigger releasably connected to the hammer and a cylinder-actuating pawl operatively connected either to the trigger or to the hammer. The pivotally mounted cylinder crane provides the means by which the cylinder may be swung or pivoted sideways from its normally closed or firing position to its open position at which position the cylinder may be loaded and unloaded. Crane latch means are provided for releasably securing the cylinder pivot shaft to the frame when the cylinder is in its closed or firing position. The crane latch means usually comprises a spring-pressed crane latch plunger mounted on the cylinder crane, the rearward end of the crane latch plunger releasably engaging a latch opening formed in the frame when the cylinder is in its closed position, and crane latch release means mounted on the frame for disengaging the said rearward end of the crane latch plunger.

In conventional revolver construction the crane latch release means usually comprises a plurality of cooperating components mounted on and within the frame of the revolver. Typically, an external member is slidably mounted on the outside of the frame, this member being connected by various other parts to an internal push rod mounted within the frame in alignment with the latch opening formed in the frame. The external member is designed to be moved forwardly by thumb pressure, this forward movement causing the push rod to move the crane latch plunger forward out of engagement with the latch opening, thereby allowing the cylinder to be moved sideways from its closed position to its open position.

SUMMARY OF THE INVENTION

The present invention comprises an improved crane latch means for either single-action or double-action revolvers that provides a simple and reliable mechanism for releasing the crane latch plunger from engagement with the latch opening in the frame. In the preferred embodiment the crane latch means cooperates with the firing mechanism of the revolver to prevent the cylinder from being moved from its closed or firing position to its open position when the revolver is cocked and to prevent the revolver from being cocked when the cylinder is at its open position.

The improved crane latch means of the invention comprises a spring-pressed crane latch plunger mounted within the cylinder pivot shaft, the rearward end of the plunger releasably engaging a latch opening formed in the frame to the rear of said cylinder pivot shaft. A crane latch release lever is pivotally mounted on a vertically disposed pivot pin for rotation in a horizontal plane that includes the longitudinal axis of the crane latch plunger when the cylinder is in its closed position, the latch release lever being provided with a forwardly extending latch release lug that bears against the rearward end of the crane latch plunger. The latch release lug disengages the crane latch plunger from the latch opening when the latch release lever is rotated counterclockwise (as viewed from above) about its pivot pin. The latch release lever is advantageously provided with a spring-pressed plunger which urges the lever toward the crane latch plunger to maintain the latch release lug in contact with the rearward end of the latch plunger. In addition, the latch release lever is advantageously provided with a laterally extending cylinder pawl-engaging element that cooperates with the upper end of the cylinder-actuating pawl to prevent the cylinder from being pivoted sideways from its normally closed position to its open position when the revolver is cocked and to prevent the firing mechanism from being cocked when the cylinder is in its open position.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a side elevation of the left-hand side of a revolver embodying the invention with nonessential parts of the barrel and the grip omitted;

FIG. 2 is a slightly enlarged sectional view along line 2—2 of FIG. 1 showing the firing mechanism of the revolver in its uncocked position;

FIG. 3 is a sectional view similar to FIG. 2 showing the crane and cylinder swung out of the frame for loading or unloading;

FIG. 4 is a sectional view along line 4—4 of FIG. 6 showing the firing mechanism in its cocked position;

FIG. 5 is a partial sectional view of FIG. 1 showing the cylinder removed from the frame as in FIG. 3;

FIG. 6 is a partial sectional view of FIG. 1 showing the firing mechanism in its cocked position as in FIG. 4; and

FIG. 7 is an enlarged perspective view of the cylinder crane latch release lever.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT

As shown best in FIG. 1, the revolver embodying the invention shown in the drawing comprises, in its major components, a frame 1, a barrel 2, grip plates 3, a cylinder 4, a cylinder crane 5, a hammer 6, a trigger 7 and a trigger guard 8. The portion of the frame 1 disposed directly to the rear of the cylinder 4 is advantageously formed with semispherical or ball-like elements 9 similar to those used on early single-action revolvers. The cylinder 4 is rotatably mounted on the cylinder pivot shaft 10 that, in turn, is secured to the upper end of the cylinder crane 5, the lower end of the crane 5 being pivotally mounted on the frame 1 by means of the crane pivot shaft 11 shown in outline in FIG. 1. The pivotally mounted crane 5 provides the means by which the cylinder 4 may be swung or pivoted from its normally closed or firing position shown in FIGS. 1 and 2 to its open position shown in FIG. 3 at which position the cylinder may be loaded and unloaded.

As shown best in FIG. 2, an essentially conventional ejector rod assembly 12 is mounted in the bore 10*a* formed in the cylinder pivot shaft 10, the ejector rod assembly comprising ejector 13, ejector spring 13*a*, crane latch plunger 14, crane latch plunger spring 14*l* and center pin 15. The crane latch plunger spring 14*a* presses the crane latch plunger 14 toward its rearward limit of travel so that, when the cylinder 4 is in its closed or firing position as shown in FIGS. 1 and 2, the spring-pressed crane latch plunger 14 is received in the latch opening 17 formed in the portion of the frame 1 that is disposed directly to the rear of the longitudinal axis of the cylinder. The engagement of the crane latch plunger 14 in the latch opening 17 retains the cylinder 4 in its closed position when the revolver is being fired and until the latch plunger 14 is pressed forwardly out of engagement with the opening 17 by the crane latch release lever 19.

The crane latch release lever 19 is pivotally mounted on a vertically disposed pivot pin 20 positioned so that the lever 19 rotates in the horizontal plane which coincides with the longitudinal axis of the crane latch plunger 14 and the cylinder 4. The pivot pin 20 is positioned in the vertical bore 21 formed in the lever 19 and advantageously is mounted in the corresponding vertical bore 22 formed in the ball-like element 9 of the frame 1. As the ball-like element 9 extends laterally beyond the normally planer outside surface of the main body of the frame 1, the pivot pin 20 of the lever 19 is also disposed outside of the main body of the frame with consequent benefit to the functioning of the lever 19.

As shown in the drawings, the crane latch release lever 19 advantageously is an angular member having one external leg 23 that is formed with a serrated thumb-contacting surface and having a second internal leg 24 that is provided with an in-

tegrally formed forwardly extending plunger-contacting lug 25 that bears against the rearward end of the crane latch plunger 14. A spring-loaded lever plunger 16 is disposed in the bore 27 formed in the lever 19, the spring pressure on the plunger 26 urging the lever counterclockwise against the crane latch plunger 14 as viewed in FIG. 2. When the lever 19 is rotated about the pivot pin 20 as indicated by the arrows in FIG. 2 (for example, by thumb pressure on the serrated thumb-contacting surface of the leg 23), the lug 25 presses the crane latch plunger 14 forward out of engagement with the latch opening 17, thereby permitting the cylinder 4 to be swung outwardly on the cylinder crane 5 to the open position shown in FIG. 3. The leg 24 of the crane latch release lever 19 is also advantageously provided with a cylinder pawl-engaging extension or element 28 that cooperates with the upper end of the cylinder-actuating pawl 29 to prevent the firing mechanism from being cocked when the cylinder 4 is in its open position as shown in FIG. 3 and 5 and also to prevent the cylinder from being opened by thumb pressure on the lever 19 when the firing mechanism is cocked as shown in FIGS. 4 and 6. The cooperation of these parts to effect the aforesaid results will be hereinafter more fully described.

The hammer 6 is pivotally mounted on the frame 1 by the hammer pivot pin 30, the hammer being spring-pressed counterclockwise (as viewed in FIGS. 1, 5 and 6) by the hammer strut 31 and the hammer spring 32. When the hammer 6 is in its normal uncocked position as shown in FIGS. 1, 2 and 5, the nose 33 of the hammer rests against the anvil 34 of the frame 1 out of contact with the firing pin 35 as shown best in FIG. 5. The hammer is provided with a pivoted, spring-pressed hammer dog 36 and is formed with a forwardly extending trigger-engaging leg 37. The trigger 7 is pivotally mounted on trigger pivot pin 39, a trigger spring (not shown) urging the trigger in a clockwise direction (as viewed in FIGS. 1, 5 and 6). The trigger 7 is provided with a rearward extension 40 that is formed with a trigger recess 41 and with a trigger sear 42. The hammer 6 and the trigger 7 are so arranged that, when these parts are in their uncocked position as shown in FIG. 5, the trigger-engaging leg 37 of the hammer is received in the trigger recess 41 of the trigger 7, and the trigger sear 42 of the trigger is positioned between the leg 37 and the pivoted hammer dog 36 of the hammer 6. The cylinder-actuating pawl 29 is pivotally connected by pivot 43 to the rearward extension 40 of the trigger 7, the upper end of the pawl 29 being adapted to engage the teeth of the ratchet 44 that are formed in the rearward end of the ejector 13. A transfer bar 45 is also pivotally connected to the rearward extension 40 of the trigger 7, the upper end of the bar 45 being formed with a laterally extending firing pin striker portion 46 that is adapted to move into position between the firing pin 35 and the hammer 6 when the firing mechanism is fully cocked as shown in FIG. 6.

When the firing mechanism is cocked as in single action, the hammer 6 is rotated clockwise against the compression of the hammer spring 32. The upwardly rotating trigger-engaging leg 37 bears against the undersurface of the trigger sear 42 and thereby causes the trigger 7 to rotate counterclockwise. When the hammer reaches its fully cocked position shown in FIG. 6 the sear edge 47 of the trigger sear 42 enters and engages the sear notch 48 of the hammer 6 and holds the hammer in its cocked position. As the rearward extension 40 of the trigger 7 rotates counterclockwise upwardly, the cylinder-actuating pawl 29 engages the cylinder ratchet 44 and rotates the cylinder 4 to the next firing position of the cylinder. At the same time, the transfer bar 45 is moved upwardly so that the striker portion 46 of the bar is positioned behind the firing pin 35 as shown in FIG. 6. When the trigger 7 is pulled, the sear edge 47 is withdrawn from engagement with the sear notch 48, thereby allowing the hammer 6 to spring forwardly counterclockwise against the striker portion 46 which, in turn, impinges against the firing pin 35 and causes the revolver to fire.

When the firing mechanism is cocked and fired as in double action, the trigger 7 is pulled rearwardly to rotate it counterclockwise about the trigger pivot pin 39. Counterclockwise rotation of the trigger 7 causes the upper surface of the trigger sear 42 to bear against the hammer dog 36, thereby causing the hammer 6 to rotate clockwise about the hammer pivot pin 30. As previously described, the upward rotation of the trigger extension 40 moves the pawl 29 upwardly into contact with the ratchet 44 to rotate the cylinder 4, and it also causes the striker portion 46 of the transfer bar 45 to move upwardly into position between the firing pin 35 and the hammer 6. Before the trigger 7 and hammer 6 reach their respective fully cocked positions, the lower surface of the trigger recess 41 of the trigger contacts the under surface of the trigger-engaging leg 37 of the hammer and, at the same trigger-engaging the trigger sear 42 disengages and is moved out of contact with the hammer dog 36. When the trigger and hammer reach their fully cocked or, more accurately, hammer release positions, the lower surface of the trigger recess 41 slips out from underneath the under surface of the trigger-engaging leg 37, thereby allowing the hammer 6 to spring forward against the striker portion 46 which, in turn, causes the firing pin to strike the cartridge in the uppermost chamber of the cylinder 4. After the revolver has been fired, the trigger 7 is allowed to return to its normal, uncocked position as shown in FIGS. 1 and 5, the downwardly moving trigger sear 42 pressing the hammer dog 36 rearwardly against the hammer dog spring until the sear 42 clears the bottom edge of the cocking bar 36.

The crane latch release lever 19 cooperates with the upper end of the cylinder-actuating pawl 29 to prevent cocking of the firing mechanism when the cylinder 4 is pivoted to its open position shown in FIG. 3 in the following manner: Thumb pressure on the serrated thumbpiece 22 of the crane latch release lever 19 causes the release lever to pivot in a clockwise direction as shown by the arrows in FIG. 2 of the drawing. The lug 25 presses the plunger 14 forward out of engagement with the opening 17 so that the cylinder 4 can be swing outwardly as shown in FIG. 3. The spring-pressed plunger 26 of the release lever 19 maintains the lever in its fully counterclockwise-rotated position with the lug 25 received in the opening 17 and the pawl-engaging element 28 resting against the frame 1 as shown in FIG. 3. When the element 28 is in the position shown in FIG. 3 it is disposed above the upper end of the cylinder pawl 29 as shown best in FIG. 5, thereby preventing upward movement of the pawl 29 which, in turn, prevents movement of both the trigger 7 and the hammer 6.

The crane latch release lever 19 cooperates with the upper end of the cylinder-actuating pawl 29 to prevent movement of the cylinder 4 from its closed or firing position when the firing mechanism is cocked in the following manner; When the firing mechanism is cocked as shown in FIG. 6, the upper end of the cylinder-actuating pawl 29 moves upwardly and forwardly into engagement with the ratchet 44. When in this position, the upper end of the pawl 29 is disposed in front of the pawl-engaging element 28, thereby preventing forward movement of the leg 24 of the lever 19. As rotation of the lever 19 is prevented by the intervention of the pawl 29, the plunger 14 cannot be depressed and, as a consequence, the cylinder 4 remains securely latched in its firing position.

What is claimed is:

1. In a revolver that includes a revolver frame a cylinder, a cylinder crane having a cylinder pivot shaft on which the cylinder is rotatably mounted and a crane pivot shaft by means of which the cylinder crane is pivotally secured to the frame, and crane latch means releasably securing the cylinder pivot shaft to the frame, said crane latch means including a spring-pressed crane latch plunger mounted within the cylinder pivot shaft, the rearward end of said plunger releasably engaging a latch opening formed in the frame to the rear of said cylinder pivot shaft, the improvement which comprises a crane latch release lever having a vertically disposed pivot pin that is pivotally mounted on the frame for rotation of said latch release lever in a horizontal plane that includes the axis of rotation of the cylinder when in its closed position, said latch release lever being provided with a forwardly extending latch release lug that bears against the rearward end of the crane

latch plunger, said lug disengaging said plunger from said latch opening when the latch release lever is rotated counterclockwise about said vertically disposed pivot pin.

2. The revolver according to claim 1 in which a spring-pressed plunger urges the latch release lever toward the crane latch plunger to maintain the latch release lug in contact with the rearward end of said latch plunger.

3. The revolver according to claim 2 in which the spring-pressed plunger is mounted in a bore formed in the latch release lever.

4. The revolver according to claim 1 in which a cylinder-actuating pawl is operatively connected to the firing mechanism of the revolver, and in which the latch release lever is provided with a cylinder pawl-engaging element, said cylinder pawl-engaging element cooperating with the upper end of the cylinder-actuating pawl to prevent the crane latch plunger from being disengaged and the cylinder from being pivoted sideways from its normally closed position to its open position when the firing mechanism of the revolver is cocked and to prevent the firing mechanism from being cocked when the cylinder is in its open position.

5. The revolver according to claim 1 in which a cylinder-actuating pawl is operatively connected to the firing mechanism of the revolver, and in which the latch release lever is provided with a laterally extending cylinder pawl-engaging element, said cylinder pawl-engaging element being disposed to the rear of the upper end of the cylinder-actuating pawl when the cylinder is in its normally closed position and the firing mechanism of the revolver is in its cocked condition thereby preventing forward movement of the latch release lever and lug to disengage the crane latch plunger of the crane latch means, and said cylinder pawl-engaging element being moved forward over the upper end of the cylinder-actuating pawl when the cylinder is in its open position thereby blocking upward travel of the cylinder-actuating pawl and cocking of the firing mechanism of the revolver.

6. The revolver according to claim 1 in which the latch release lever has an angular configuration one leg of which is provided with a thumb-contacting surface and the second leg of which is provided with the forwardly extending latch release lug, the latch release lever being pivoted on a vertically disposed pivot pin located at the junction of the two legs of said lever.

7. The revolver according to claim 6 in which a cylinder-actuating pawl is operatively connected to the firing mechanism of the revolver, and in which the second leg of the angular latch release lever is provided with a cylinder pawl-engaging element that cooperates with the cylinder-actuating pawl of the revolver to prevent the cylinder from being swung from its normally closed to its open position when the firing mechanism of the revolver is in its cocked condition and to prevent the firing mechanism from being cocked when the cylinder is in its open position.

8. The revolver according to claim 1 in which the frame is formed with a ball-shaped element disposed directly to the rear of the cylinder, the latch release lever being pivotally mounted on a vertically disposed pin positioned in said ball-shaped element.

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