United States Patent [19]

Ruger

[11] **3,838,533**

[45] **Oct. 1, 1974**

[54] **HAMMER DEACTIVATOR MEANS**

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[73] Assignee: **Ruger Sturm & Co., Inc.**, Southport, Conn.

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[21] Appl. No.: **406,020**

[52] **U.S. Cl.** ..... **42/70 F**, 42/66

[51] **Int. Cl.** **F41c 17/04**

[58] **Field of Search** ..... 42/66, 70 F

[56] **References Cited**

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Primary Examiner—Benjamin A. Borchelt

Assistant Examiner—C. T. Jordan

[57] **ABSTRACT**

A firearm having an external hammer pivotally mounted on the frame in position to strike a firing pin also mounted in the frame is provided with a hammer having means for striking the firing pin combined with means for deactivating the hammer. The combined hammer deactivator and firing pin striker means is pivotally mounted on the hammer in line with the firing pin. The deactivator and striker is rotatable from a hammer deactivated position to a firing pin striking position and return, said deactivator and striker being formed with a deactivator recess that is adapted to receive the rearward end of the firing pin when the deactivator and striker is at its hammer deactivated position and being formed with a firing pin striker surface that is adapted to contact the rearward end of the firing pin and press it forwardly when the deactivator and striker is at its firing pin striking position.

7 Claims, 8 Drawing Figures

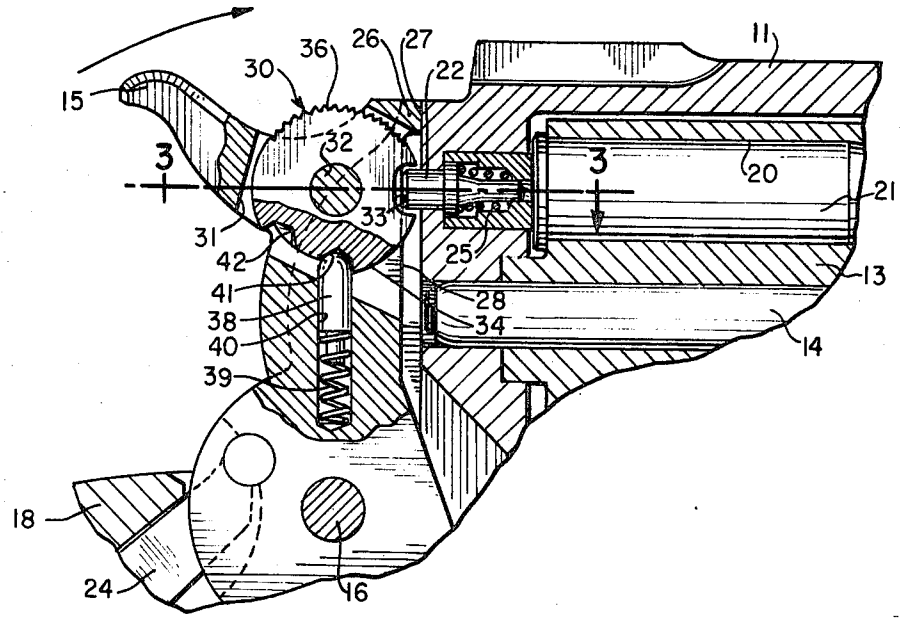


FIG. 1

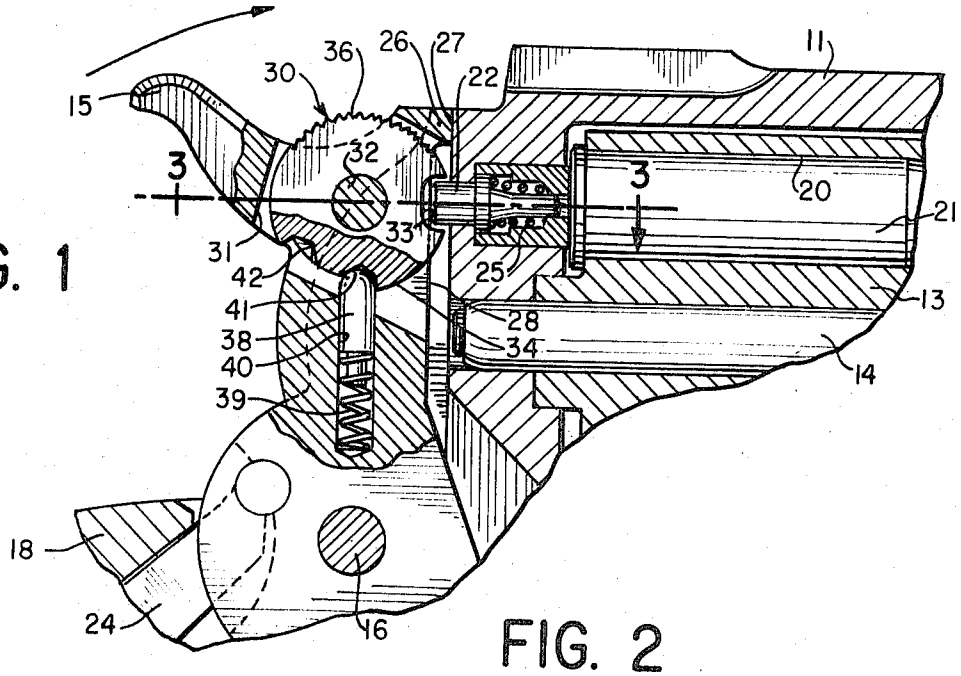


FIG. 2

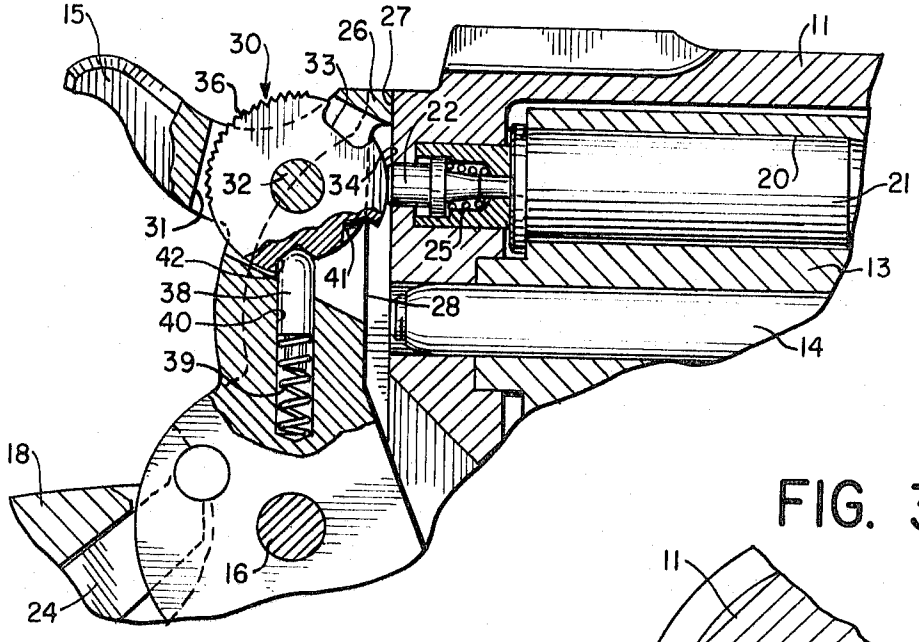


FIG. 3

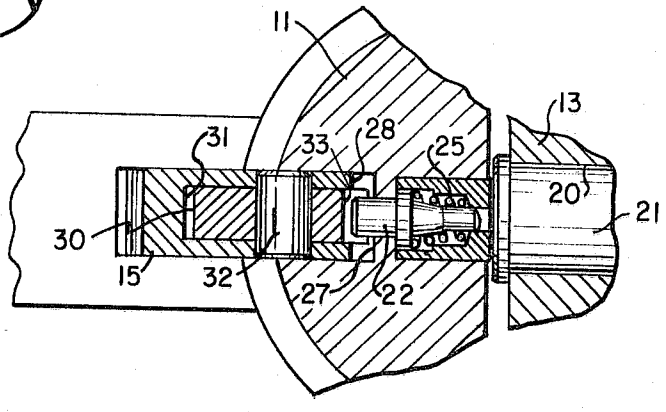


FIG. 4

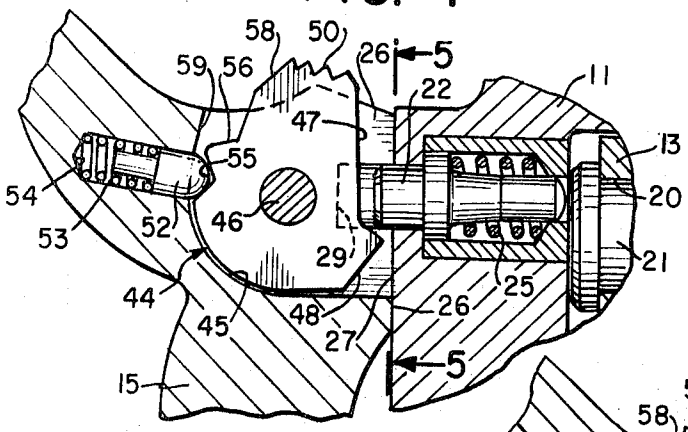


FIG. 5

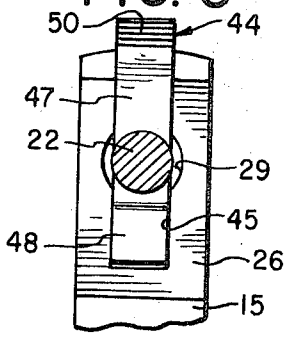


FIG. 6

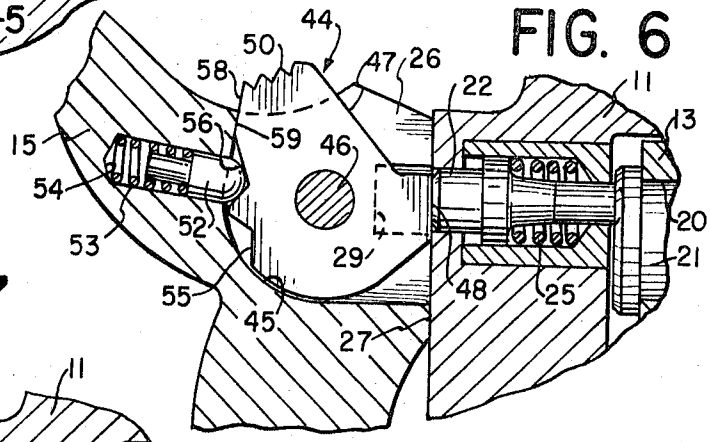


FIG. 7

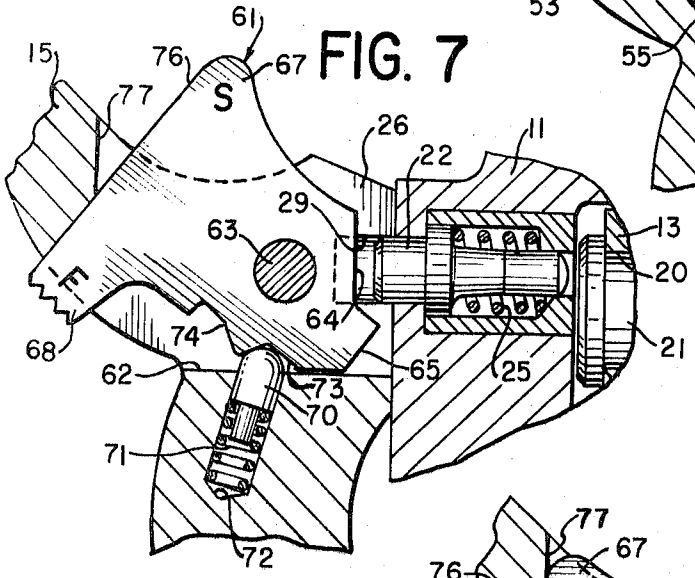
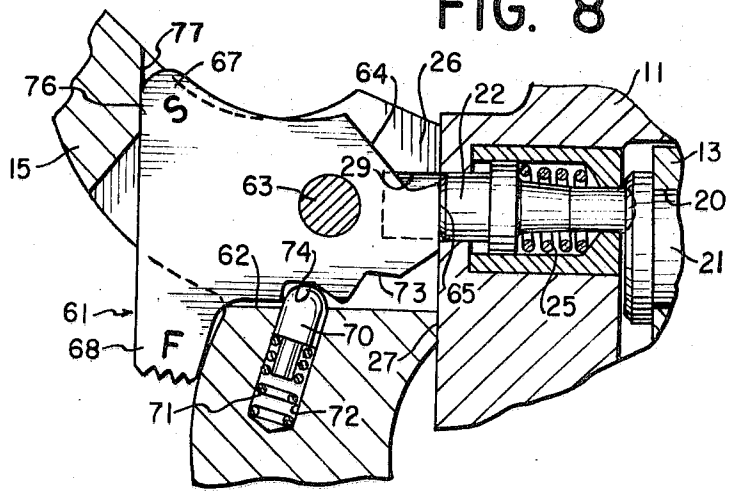


FIG. 8



HAMMER DEACTIVATOR MEANS

BACKGROUND OF THE INVENTION

1. Field of the Invention

This invention relates to firearms having an external hammer.

2. The Prior Art

Firearms of the type to which the present invention relates are those which have an external hammer that is pivotally mounted on the frame, the hammer being designed to strike a separate firing pin also mounted on the frame in position to strike a cartridge received in the chamber of the firearm. Such firearms include single and double action revolvers, single shot rifles and shotguns of the break-open type having an external hammer, lever or pump action repeating rifles and shotguns having an external hammer that may be cocked manually or when the action is worked, and similar firearms. All of these firearms share in common an external hammer having a sear notch that is engaged by the sear of the trigger when the hammer is cocked, the hammer springing forward to strike the firing pin when the trigger is pulled and the sear disengaged. Moreover, all of these firearms are provided with some form of safety mechanism which, when activated, is designed to prevent the hammer from striking or bearing against the firing pin, thereby preventing accidental discharge of the firearm when it is being carried or handled. The safety mechanism may comprise a safety notch in the hammer that is engaged by the sear (or some equivalent element) of the trigger when the hammer is in its safe position out of contact with the firing pin, or it may comprise a separate member that can be interposed between the hammer and the frame to prevent the hammer from striking the firing pin, or it may comprise some other known type of mechanism. In addition, the hammer may be of the rebound type which, after striking the firing pin, moves rearwardly a short distance out of contact therewith.

Whatever the type of safety mechanism employed, and no matter how reliable it may be under ordinary circumstances, there is always the danger than the safety mechanism may fail and permit accidental discharge of the firearm if it is abused or misused in some way. After an intensive investigation of the subject of safety mechanisms for firearms of the above described type, I have devised means for completely deactivating the hammer by rendering it inoperative as far as its intended purpose (that is, striking the firing pin) is concerned. In accordance with the invention the hammer is provided with a movable member that combines means for striking the firing pin with means for deactivating the hammer. As a result, the hammer, and therefore the the firing mechanism of the firearm, can be deactivated or activated at will simply by moving the said movable member to its hammer deactivated position or to its firing pin striking position, as hereinafter more fully described.

SUMMARY OF THE INVENTION

The hammer deactivator of the invention is designed to be employed with a firearm having a frame, an external hammer pivotally mounted on the frame, a cartridge-receiving chamber located in front of the hammer, and a firing pin mounted in the frame in position to strike a cartridge received in said chamber, the rearward end of the firing pin extending rearwardly with respect to the frame in position to be struck by said hammer. The combined hammer deactivator and firing pin striker of the invention is pivotally mounted on the hammer in line with the firing pin, said deactivator and striker being rotatable from a hammer deactivated position to a firing pin striking position and return. The deactivator and striker is formed with a deactivator recess that is adapted to receive the rearward end of the firing pin when the deactivator and striker is at its hammer deactivated position and is formed with a firing pin striker surface that is adapted to contact the rearward end of the firing pin and press it forwardly when the deactivator and striker is at its firing pin striking position. Detent means advantageously releasably detain the pivoted deactivator and striker in its hammer deactivated position and in its firing pin striking position, respectively. The hammer is advantageously formed with a forwardly projecting nose portion that rests against a rearwardly facing surface of the frame when the hammer is at its rest position, the hammer deactivator and firing pin striker being maintained out of contact with the firing pin by said nose portion when said deactivator and striker is at its hammer deactivator position. Other features of the hammer deactivator of the invention will become evident from the following detailed description thereof.

BRIEF DESCRIPTION OF THE DRAWINGS

The hammer deactivator and firing pin striker of the invention will be better understood from the following detailed description thereof in conjunction with the accompanying drawings of which:

FIG. **1** is a fragmentary sectional view of a firearm (specifically, a revolver) showing an advantageous embodiment of the combined hammer deactivator and firing pin striker means at its hammer deactivated position;

FIG. **2** is a fragemntary sectional view similar to FIG. **1** showing the hammer deactivator and firing pin striker means at its firing pin striking position,

FIG. **3** is a sectional view along line **3—3** of FIG. **1**,

FIG. **4** is a fragmentary sectional view of a firearm showing another embodiment of the hammer deactivator and firing pin striker means at its hammer deactivated position,

FIG. **5** is a sectional view along line **5—5** of FIG. **4**,

FIG. **6** is a view similar to FIG. **4** showing the hammer deactivator and firing pin striker means at its firing pin striking position, and

FIGS. **7** and **8** are fragmentary sectional views showing yet another embodiment of the hammer deactivator and firing pin striker means at its hammer deactivated position and at its firing pin striking position, respectively.

DESCRIPTION OF THE PREFERRED EMBODIMENT

As previously mentioned, firearms of the type to which the present invention relates are those which have an external hammer that is pivotally mounted on the frame, the hammer being designed to strike a separate firing pin also mounted on the frame in position to strike a cartridge received in the chamber of the firearm. Such firearms include single and double action re-

volvers, single shot and repeating rifles and shotguns having an external hammer that may be cocked manually or when the action is worked, and similar firearms. In the interests of clarity and brevity the invention will be described in conjunction with a single action revolver. However it will be understood that the invention is applicable to all firearms having an external hammer and a separate firing pin.

The single action revoler embodying the hammer deactivator and firing pin striker means of the invention is shown in the drawings with those parts cut away which are not required for an understanding of the present invention. The revolver, in its principal components, comprises a frame **11**, a barrel (not shown), a cylinder **13** pivotally mounted on the frame **11** by means of a cylinder pivot shaft **14**, a hammer **15** pivotally mounted on the frame **11** by the pin **16**, a trigger (not shown) that releasably engages the hammer **15**, and a hand grip **18**. The cylinder **13** is formed with a plurality (usually 6) of cartridge receiving chambers **20** each of which is adapted to receive a cartridge **21**. A spring loaded firing pin **22** is mounted on the frame **11** in position to strike a cartridge **21** received in the uppermost chamber **20** of the cylinder **13**. A hammer spring (not shown) mounted on the hammer strut **24** urges the hammer forwardly to its rest position as shown in FIG. **1**.

The spring **25** of the firing pin **22** urges the firing pin rearwardly so that the rearward end thereof normally projects a short distance rearwardly with respect to the adjacent surface of the frame **11**, as shown in FIG. **1**. The hammer **15** is normally provided with a firing pin striker surface that contacts the rearward end of the firing pin **22** and presses the firing pin forwardly against the cartridge **21** when the revolver is fired. Means may be provided for withdrawing or moving the hammer rearwardly out of direct contact with the firing pin after the revolver is fired and the trigger is released, thereby allowing the firing pin **22** to move rearwardly out of contact with the cartridge **21**. In all of the embodiments of the invention shown in the drawings, the hammer **15** is provided a forwardly projecting nose portion **26** that rests against a rearward facing surface **27** of the frame **11** when the hammer **15** is at its rest position. In the embodiment shown in FIGS. **1** to **3** the nose portion **26** of the hammer **15** is formed with a cut out area or recess **28** that is adapted to receive the rearward end of the firing pin **22**, and in the embodiments shown in FIGS. **4** through **8** the nose portion **26** of the hammer **15** is formed with a blind bore or recess **29** that also is adapted to receive the rearward end of the firing pin **22**. In all embodiments, the hammer is provided with the combined hammer deactivation and firing pin striking means of the invention.

The embodiment of the hammer deactivator and firing pin striking means shown in FIGS. **1** to **3** comprises a rotatable member **30** that is pivotally mounted on the hammer **15** in line with the firing pin **22**. In the embodiment shown in the drawings the hammer **15** is formed with a deactivator and striker receiving slot **31** in which the deactivator and striker member **30** is pivotally mounted by means of the pivot pin **32**. The deactivator and striker member **30** is formed with a deactivator recess **33** and with a firing pin striker surface **34**. When the deactivator and striker member **30** is rotated to its hammer deactivated position as shown in FIGS. **1** and **3**, the rearward end of the firing pin **22** is received in the recess **28** of the hammer **15** and in the deactivator recess **33** of the member **30**, thereby preventing contact of the hammer **15** against the firing pin. When the deactivator and striker member **30** is rotated to its firing pin striking position as shown in FIG. **2** the firing pin striker surface **34** thereof contacts the rearward end of the firing pin **22** and presses the firing pin forwardly against the cartridge **21** received in the chamber **20**.

The combined hammer deactivator and firing pin striker member **30** is advantageously formed with a knurled surface area **36** to facilitate rotation of the deactivator and striker member **30** to its hammer deactivated position as shown in FIG. **1** and to its firing pin striking position as shown in FIG. **2**. The deactivator and striker member **30** is also advantageously provided with detent means for releasably detaining the rotatable deactivator and striker means in its hammer deactivated position and in its firing pin striking position. In the embodiment shown in the drawings the detent means comprises a detent plunger **38** and spring **39** mounted in the bore **40** formed in the hammer **15**. The periphery of the deactivator and striker member **30** is formed with a deactivated position detent notch **41** and with a striking position detent notch **42** in which the end of the detent plunger **38** is received when the deactivator and striker member **30** is at its hammer deactivated position or at its firing pin striking position, respectively.

When the hammer deactivator and firing pin striker means is moved to its hammer deactivated position as shown in FIGS. **1** and **3**, the hammer **15** is deactivated or rendered inoperative as far as its intended purpose is concerned. That is to say, the hammer is rendered incapable of contacting the firing pin **22** and thereby causing the firing pin to strike the cartridge **21**. When the deactivator and striker means is moved to its firing pin striking position as shown in FIG. **2**, the hammer **15** is activated or rendered operative for its intended function in the firearm. When in this position the firing pin striker surface **34** strikes the rearward end of the firing pin **22** when the firearm is fired. It is necessary, therfore, that the deactivator and striker means be mounted on the hammer **15** in position to accomplish this result, and it is advantageously mounted on the hammer with the pivot pin **32** in approximate horizontal alignment with the firing pin **22**.

In the embodiment shown in FIGS. **4** to **6** the hammer deactivator and firing pin striking means comprises a rotatable member **44** that is pivotally mounted in the deactivator and striker receiving slot **45** of the hammer **15** by means of the pivot pin **46** in line with the firing pin **22**. The deactivator and striker member **44** is formed with a deactivator recess **47** and with a firing pin striker surface **48**. When the deactivator and striker member **44** is rotated to its hammer deactivator position as shown in FIGS. **4** and **5**, the rearward end of the firing pin **22** is received in the recess **29** of the hammer and in the deactivator recess **47** of the member **44**, thereby preventing contact of the hammer **15** against the firing pin. When the deactivator and striker member **44** is rotated to its firing pin striking position as shown in FIG. **6** the firing pin striker surface **48** thereof contacts the rearward end of the firing pin **22** and presses the firing pin forwardly against the cartridge **21** received in the chamber **20**.

The combined hammer deactivator and firing pin striker member **44** is formed with a knurled surface area **50** t0 facilitate rotation of the deactivator and striker member **44** to its hammer deactivated position as shown in FIG. **4** and to its firing pin striking position as shown in FIG. **6.** A detent plunger **52** and spring **53** are mounted in the bore **54** formed in the hammer **15.** The periphery of the deactivator and striker member **44** is formed with a deactivated position detent notch **55** and with a striking position detent notch **56** in which the end of the detent plunger **52** is releasably received with the deactivator and striker member **44** is at its hammer deactivated position or at its firing pin striking position, respectively.

An advantageous feature of the deactivator and striker member **44** is the flat hammer contacting surface **58** of the member **44** that rests against a forward facing striker stop surface **59** of the hammer **15** when the deactivator and striker member **44** is at its firing pin striking position as shown in FIG. **6.** When the hammer contacting surface **58** of the deactivator and striker member **44** rests against the stop surface **59** of the hammer **15,** the striker stop surface **59** prevents further rearward movement of the upper portion of the member **44.** This insures that the firing pin striker surface **48** is in position to strike the rearward end of the firing pin **22.** In addition, when the firing pin striking surface **48** strikes the rearward end of the firing pin **22,** much of the impact is transmitted by the member **44** to the striker stop surface **59,** thereby greatly reducing the stress on the pivot pin **46** to which the pivot pin would otherwise be subjected.

In the embodiment shown in FIGS. **7** and **8** the hammer deactivator and firing pin striking means comprises a rotatable member **61** that is pivotally mounted in the deactivator and striker receiving slot **62** of the hammer **15** by means of the pivot pin **63** in line with the firing pin **22.** The deactivator and striker member **61** is formed with a deactivator recess **64** and with a firing pin striker surface **65.** When the deactivator and striker member **61** is rotated to its hammer deactivated position as shown in FIG. **7,** the rearward end of the firing pin **22** is received in the recess **29** of the hammer and in the deactivator recess **64** of the member **61,** thereby preventing contact of the hammer **15** against the firing pin. When the deactivator and striker member **61** is rotated to its firing pin striking position as shown in FIG. **8,** the firing pin striker surface **65** thereof contacts the rearward end of the firing pin **22** and presses the firing pin forwardly against the cartridge **21** received in the chamber **20.**

The deactivator and striker member **61** is provided with an upper projection **67** and with a lower projection **68** that facilitates rotation of the member **61** from its hammer deactivated position to its firing pin striking position and return. When the deactivator and striker member **61** is at its hammer deactivated position as shown in FIG. **7,** the upper projection **67** projects prominently above the adjacent upper surface of the hammer **15** in position to be readily depressed by the normal hammer cocking motion of the shooter's thumb. When the deactivator and striker member **61** is at its firing pin striking position as shown in FIG. **8,** the upper projection **67** is almost completely received in the slot **62** of the hammer **15,** and the lower projection **68** extends downwardly in position to be pressed upwardly whenever the shooter desires to deactivate the hammer.

A detent plunger **70** and spring **71** are mounted in the bore **72** formed in the hammer **15.** The periphery of the deactivator and striker member **61** is formed with a deactivated position detent notch **73** and with a striking position detent notch **74** in which the end of the detent plunger **70** is releasably received when the deactivator and striker member **61** is at its hammer deactivated position (FIG. **7** or at its firing pin striking position (FIG. **8**), respectively.

As in the preceding embodiment, the deactivator and striker member **61** is provided with a flat hammer contacting surface **76,** and the hammer **15** is provided with a forward facing striker stop surface **77.** When the deactivator and striker member **44** is at its firing pin striking position as shown in FIG. **8,** the hammer contacting surface **76** of the member **61** rests against the striker stop surface **77** of the hammer **15,** the striker stop surface **77** preventing further rearward movement of the upper portion of the deactivator and striker member **61.** This insures that the firing pin striker surface **65** is in position to strike the rearward end of the firing pin **22.** In addition, when the firing pin striking surface **65** strikes the rearward end of the firing pin **22,** much of the impact of the blow is transmitted by the member **61** to the striker stop surface **77,** thereby greatly reducing the stress on the pivot pin **64** to which the pivot pin would otherwise be subjected.

I claim:

1. In a firearm having a frame, an external hammer pivotally mounted on the frame, a cartridge-receiving chamber located in front of the hammer, and a firing pin mounted in the frame in position to strike a cartridge received in said chamber, the rearward end of the firing pin extending rearwardly with respect to the frame in position to be struck by said hammer, the improvement comprising

a combined hammer deactivator and firing pin striker pivotally mounted on the hammer in line with the firing pin, said deactivator and striker being movable from a hammer deactivated position to a firing pin striking position and return, said deactivator and striker being formed with a deactivator recess that is adapted to receive the rearward end of the firing pin when the deactivator and striker is at its hammer deactivated position and being formed with a firing pin striker surface that is adapted to contact the rearward end of the firing pin and press it forwardly when the deactivator and striker is at its firing pin striking position, and

detent means releasably detaining the pivoted deactivator and striker in its hammer deactivated position and in its firing pin striking position.

2. The firearm according to claim **1** in which the hammer is formed with a forwardly projecting nose portion that rests against a rearward facing surface of the frame when the hammer is at its rest position, thereby maintaining the deactivator out of contact with the firing pin when the hammer deactivator and firing pin striker is at its hammer deactivated position.

3. The firearm according to claim **1** in which the hammer is formed with a slot in which the pivoted hammer deactivator and firing pin striker is received.

4. The firearm according to claim **1** in which the detent means comprises a detent plunger and spring mounted in a bore formed in the hammer, and a deacti-

vated position detent notch and a firing position detent notch formed in the periphery of the pivoted deactivator and striker.

5. The firearm according to claim 1 in which the firearm is a revolver having a cylinder rotatably mounted on the frame in front of the hammer.

6. The firearm according to claim 1 in which the pivoted hammer deactivator and firing pin striker is formed with a hammer contacting surface that rests against a forward facing striker stop surface formed in the hammer when the pivoted deactivator and striker is at its firing pin striking position.

7. The firearm according to claim 1 in which the pivoted hammer deactivator and firing pin striker means is provided with an upper projection and with a lower projection, in which said upper projection projects above the adjacent upper surface of the hammer in position to be depressed by the normal hammer cocking motion of the shooter's thumb when said deactivator and striker means is at its hammer deactivated position, and in which said lower projection extends downwardly in position to be pressed upwardly by the shooter when said deactivator and striker means is at its firing pin striking position.

* * * * *

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(5/69)

UNITED STATES PATENT OFFICE
CERTIFICATE OF CORRECTION

Patent No. 3,838,533 Dated October 1, 1974

Inventor(s) WILLIAM B. RUGER

It is certified that error appears in the above-identified patent and that said Letters Patent are hereby corrected as shown below:

Title page, item 73, "Ruger Sturm & Co. Inc." should read -- Sturm, Ruger & Co. Inc. --

Column 1, line 43, "than" should read -- that --
Column 1, line 56, "the the" should read -- the --

Column 2, line 39, "fragemntary" should read -- fragmentary --

Column 3, line 9, "revoler" should read -- revolver --

Column 5, line 12, change "with" to -- when --

Column 6, line 10, after "7" insert --) --

Signed and sealed this 7th day of January 1975.

(SEAL)
Attest:

McCOY M. GIBSON JR.
Attesting Officer

C. MARSHALL DANN
Commissioner of Patents

PO-1050
(5/69)

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