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Martz

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[54] **TOGGLE RELEASE FOR LUGER PISTOL**

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[52] **U.S. Cl.** **89/175;** 89/148; 89/189

[51] **Int. Cl.²** **F41D 3/02**

[58] **Field of Search** 89/175, 138, 189, 148

[56] **References Cited**

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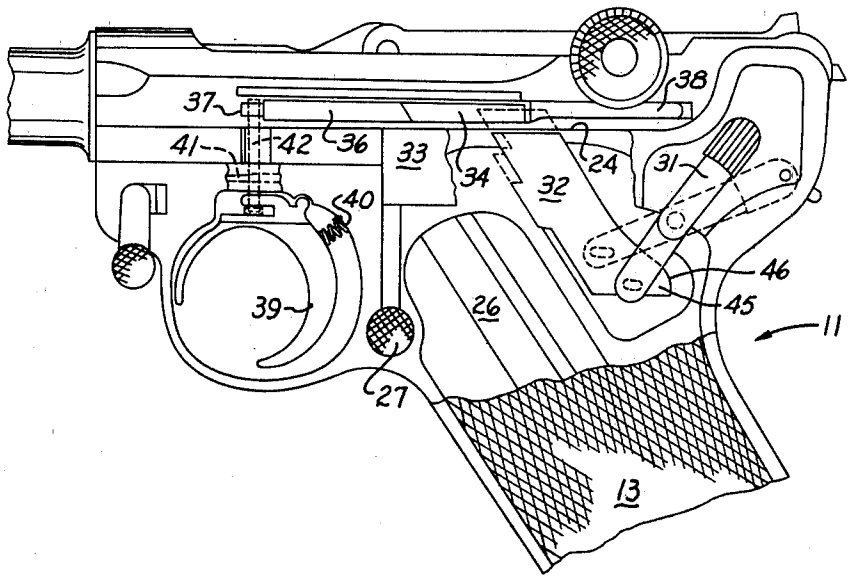
[57] **ABSTRACT**

In a Luger pistol equipped with a toggle hold open mechanism, a small portion of one of the frame side rails is milled out in the vicinity of the sear bar slide to receive a new L-shaped release lever engageable at one end with the gun's hold open latch. The original sear bar slide is replaced by a modified form engageable with both the thumb safety lever and with the release lever in such manner that as the safety lever is moved to "safe" position, the release lever disengages the hold open latch from the breech block and allows the toggle mechanism to move forwardly and downwardly into closed position. Concurrently, the trigger mechanism is automatically locked against firing.

3 Claims, 6 Drawing Figures



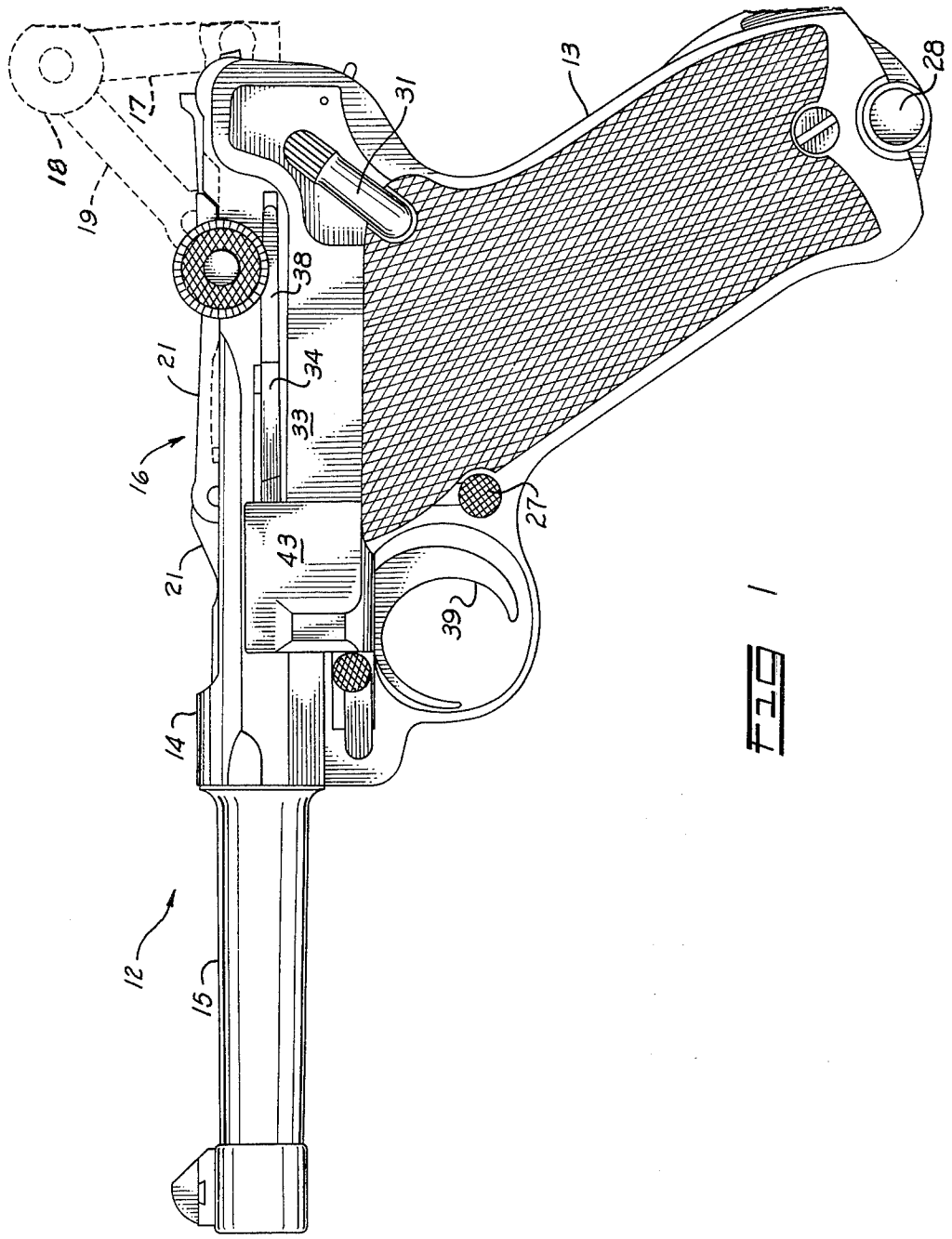


FIG 1

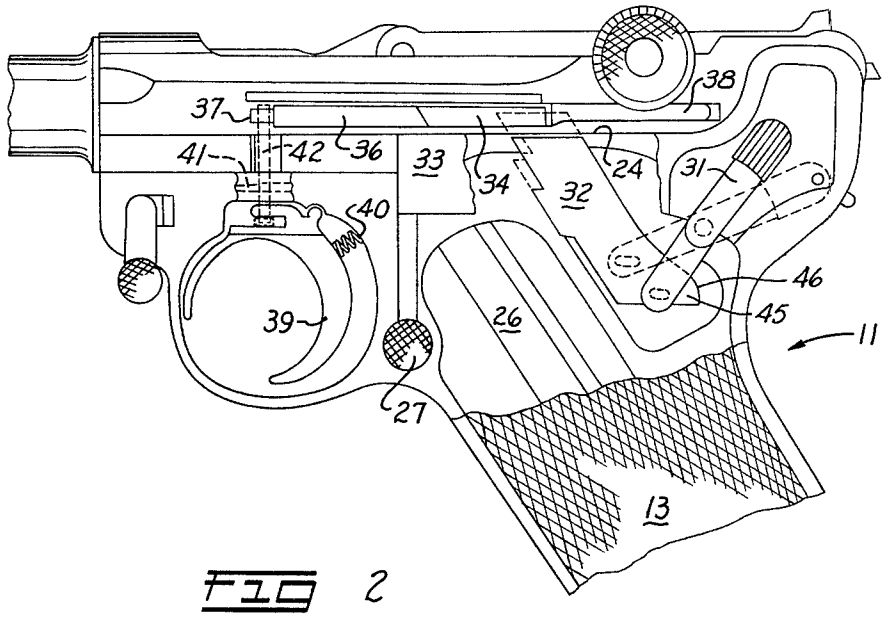

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FIG 2

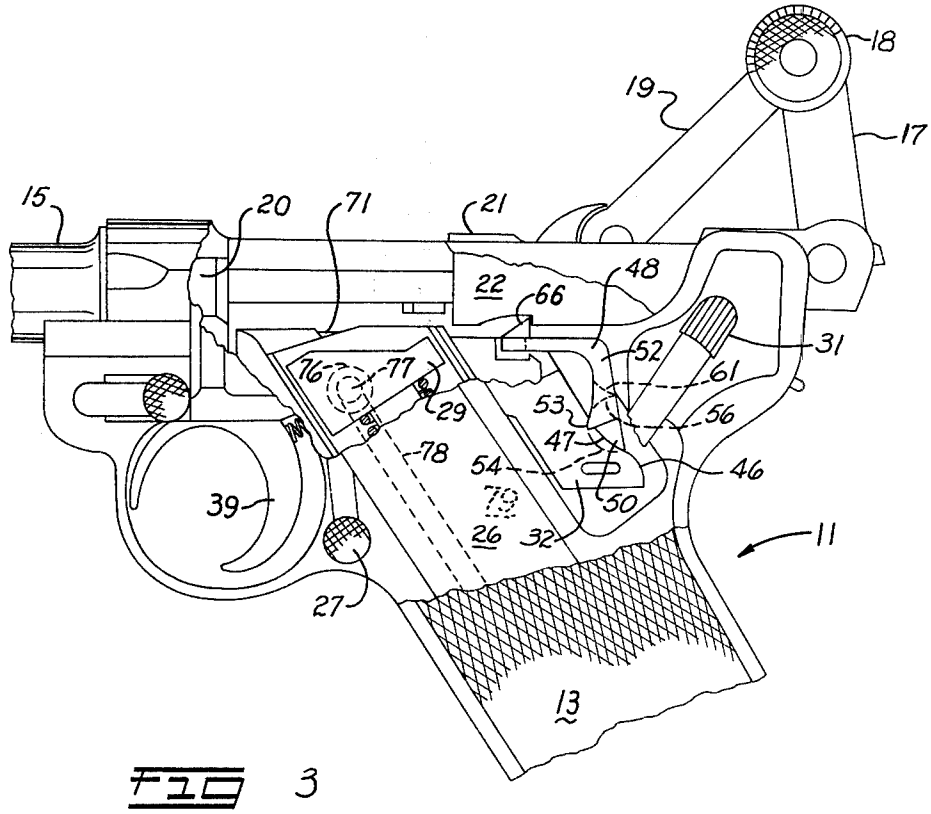
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FIG 3

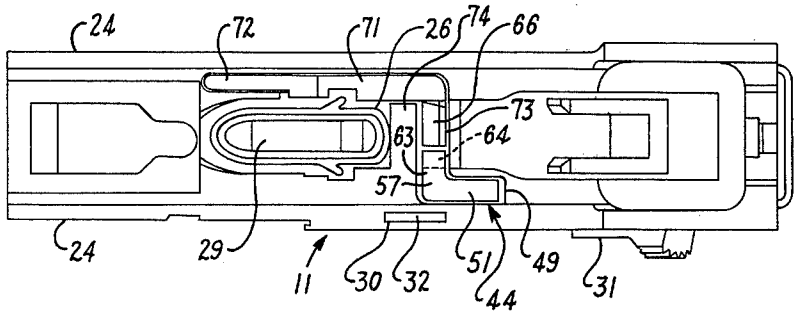

FIG 4

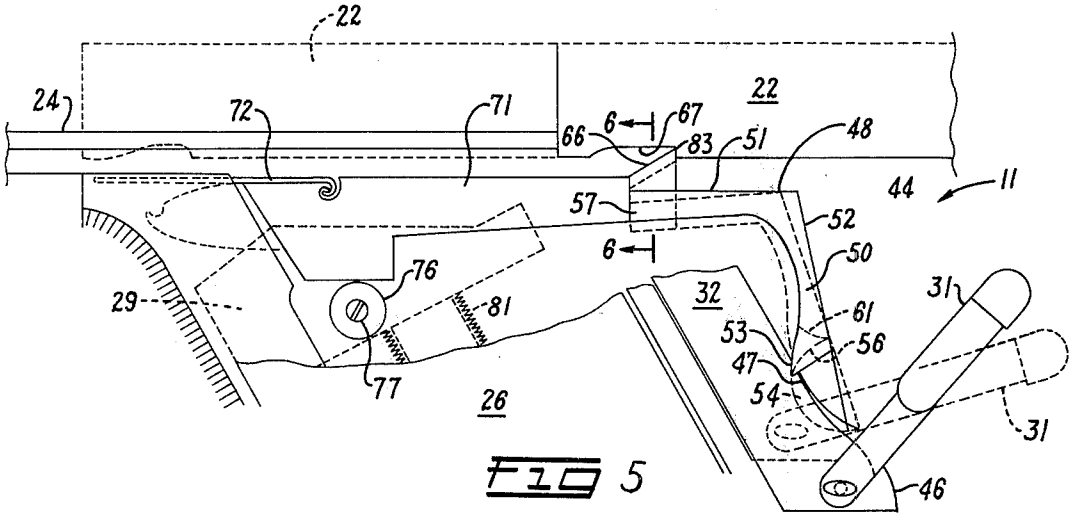

FIG 5

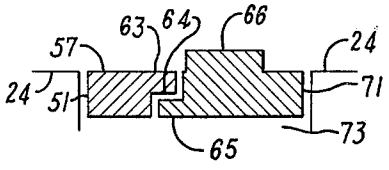

FIG 6

TOGGLE RELEASE FOR LUGER PISTOL

BACKGROUND OF THE INVENTION

The device can be installed on any Luger pistol equipped with a hold open device, such as those guns produced in Germany during the years 1908 to 1942 and known as Model P.08.

In such model, the user is alerted to the fact that the gun has fired the last round from the magazine by the toggle's remaining in open, or buckled, position when the magazine has been emptied and the remaining shell in the firing chamber has been fired and ejected.

Heretofore, in order to restore the toggle assembly to closed position, it has been necessary to press the magazine release stud, remove the empty magazine from the butt of the pistol, grasp and forcefully pull up and back on the milled toggle knobs as far as the breech block will go and then release the knobs so that the recoil spring can drive the breech block straight ahead in its guide into locked position.

Gun collectors and fanciers appreciate the watch-like, or camera-like, precision of Luger pistols; but would often prefer that the toggle be selectively returnable to base position, once it has performed its warning function, by a simpler, more direct course of action than that recited above.

It is likewise most desirable to be able to release the toggle and simultaneously lock the trigger mechanism in the unlikely but possible event that the toggle prematurely remains in open position as a result of a weak or malfunctioning hold open catch spring.

SUMMARY OF THE INVENTION

The invention relates generally to improvements in the construction of Model P.08 Luger pistols and, more particularly, to mechanism for releasing the toggle train of such guns without removing the magazine, and for simultaneously rendering the gun safe by a simple movement of the thumb safety lever from "fire" to "safe" position.

It is an object of the invention to provide a toggle release mechanism which fits entirely within the existing interior confines of a Model P.08 Luger pistol and which therefore does not alter the exterior appearance of the gun in any way.

It is another object of the invention to provide a device in which a single movement not only actuates the existing trigger lock mechanism but also releases the toggle, and which requires only one minor machining operation on a side rail of the gun frame, three simple modifications to existing gun components and one small new part.

It is still another object of the invention to provide a toggle release which becomes operative in the event a malfunctioning, or weak, hold open latch spring prematurely causes the toggle to remain open, and which enables the user not only to lower the action merely by putting the safety lever on "safe" but thereafter to fire any remaining bullets in the magazine by returning the safety lever to firing position.

It is yet another object of the invention to provide a toggle release which remains inactive during the course of firing the gun, but which is automatically placed in operative condition when the toggle is retained in open position so that toggle release can be effected merely by moving the thumb safety lever to "safe" position, a

movement which a right-handed person can perform single-handedly.

It is a further object of the invention to provide a toggle release mechanism which is safe and reliable, has but a minimum of parts to get out of order and renders a Luger pistol Model P.08 more modern and efficient.

It is an additional object of the invention to provide a generally improved toggle release for a Model P.08 Luger pistol.

Other objects, together with the foregoing ar attained in the embodiment described in the following description and illustrated in the accompanying drawings.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. **1** is a side elevational view of a Model P.08 Luger pistol showing the position of a closed toggle in full line and the position of an open toggle in broken line;

FIG. **2** is a fragmentary side elevational view with the cover plate remove and with portions broken away to show the construction and operation of the modified form of scar bar slide and thumb safety lever in locking the trigger mechanism as the safety lever is moved from "fire" position, shown in full line, to "safe" position, shown in broken line;

FIG. **3** is a view comparable to FIG. **2** but with additional portions broken away to show the magazine follower with the stud which abuts and elevates the hold open catch lever when the magazine is empty, and showing the relationship of the release lever, sear bar slide, catch and breech block with the toggle assembly in open position;

FIG. **4** is a fragmentary top plan view of the gun with the barrel, barrel extension and toggle assembly removed;

FIG. **5** is a fragmentary side elevational view, to an enlarged scale, and with portions broken away, showing the relative locations of the catch mechanism, th catch release structure, the sear bar slide and the thumb safety lever in the two extreme positions of the foregoing components; and,

FIG. **6** is a fragmentary transverse sectional view, to a greatly enlarged scale, of the forward end of the overlying portion of the catch release lever and the underlying portion of the catch lever, the section being taken on the line **6 — 6** in FIG. **5.**

While the toggle release mechanism of the invention is susceptible of numerous different physical embodiments, depending upon the environment and requirements of use, substantial numbers of the herein shown and described embodiment have been made, tested and used, and all have performed in an eminently satisfactory manner.

The mechanism of the invention, generally designated by the reference numeral **11,** finds particular utility in a Model P.08 Luger pistol **12** which includes, in well known fashion, a handle **13,** a frame **14,** or barrel extension, and a barrel **15.**

One of the unique characteristics of the pistol is the toggle train mechanism **16** including a pivoted after lever **17,** pivoted toggle knobs **18,** pivoted forward lever **19** and slidable shoe **21** which carries the breech block **22,** as well as the extractor and firing pin. The shoe and the attached breech block slide in longitudinal guide slots on opposite frame side rails **24.** This structure is conventional and is therefore neither shown nor described in detail.

The gun also includes a magazine **26** which is slidably mounted in the handle **13**, the magazine being held in place by a magazine latch released by laterally depressing a stud **27**. Finger grips **28** on the lower end of the magazine facilitate removal.

Inside the magazine is a spring biased follower **29**, or platform, which urges the superposed shells upwardly so that when the toggle train **16** closes, the breech block **22** abuts and urges the topmost cartridge out of the magazine and forwardly into the firing chamber **20** at the base of the barrel **15**. The extractor then locks in the cannelure of the cartridge case and the gun is in firing condition.

A thumb safety lever **31** is pivotally mounted on the frame **14** and is movable between the "fire" position shown in full line in FIG. **2** and the "safe" or "Gesichert" or "Made safe" position shown in broken line. Movement of the safety lever **31** between the two positions causes a corresponding translation of a sear bar slide **32** which is movable in a channel **30** formed in the adjacent frame side rail **24**.

When the safety lever is in "fire" position the sear bar slide **32** is in lowermost, or retracted, position, as indicated in full line.

However, when the safety lever **31** is moved to "safe" position, the sear bar slide **32**, which is in pivotal engagement with the lever **31**, is translated upwardly so as to project above the frame side rail **24** and cover the after end **34** of the horizontal firing pin release lever **36**, thereby immobilizing the lever **36** and associated firing pin mechanism, in well known manner.

The firing pin release lever **36** is pivotally mounted on a vertical pivot, the forward end of the lever **36** terminating in a pressure pin **37** biased laterally outwardly by a leaf spring **38** bearing laterally inwardly on the after end of the lever **36**.

When the trigger **39** is "pressed" rearwardly against the spring **40** a linkage **41** urges a vertical bar **42**, which is pivotally mounted on the inside wall of a cover plate **43**, laterally inwardly against the pressure pin **37**, in opposition to leaf spring **38**. Inward displacement of the pressure pin **37** is followed by release of the firing pin, or striker, and consequent firing of the gun.

Immobilization of the firing pin release lever **36** by the sear bar slide **32**, in other words, "locks" the trigger **39**.

Upward translation of the sear bar slide **32**, caused by moving the gun safety lever **31** into "safe" position concurrently actuates the toggle release mechanism, generally designated by the reference numeral **44**.

The lower after end of the sear bar slide **32** is arcuately contoured, as appears in FIGS. **2** and **3**, to provide a camming surface **46** in engagement with the arcuate surface **47** formed on the lower end **50** of an L-shaped release lever **48**.

The release lever **48** is disposed, for the most part in a vertically milled slot **49** in the frame side rail **24** adjacent but spaced a short distance inwardly and rearwardly from the channel **30** occupied by the sear bar slide **32**.

The Model P.08 pistol as manufactured does not have the slot **49** and it is therefore necessary to mill this opening in the frame side rail **24** to receive the lever **48**.

The release lever **48** includes a generally horizontal fore and aft arm **51** and a generally vertical arm **52**, the lower end of the vertical arm **52** being formed so as to provide not only the arcuate cam engaging surface **47** but also an outer flange **53** and an inner flange **54**, the two flanges **53** and **54** slidingly embracing opposite sides of the sear bar slide **32** and thereby providing a track-like structure which allows relative sliding motion between the surfaces **46** and **47** but which restrains the lever **48** from relative lateral motion with respect to the sear bar slide **32**.

When the sear bar slide **32** translates upwardly, the camming surface **46** on the sear bar slide engages and urges the lower end **50** of the release lever **48** in a rearward direction. Owing to the presence of an inwardly projecting arcuate shouler **56** on the inner side of the lower end **50** in the vicinity of and slightly above the inner flange **54**, a pivoting action is also attained, thereby urging the forward end **57** of the fore and aft arm **51** in a downward direction.

The pivoting action occurs at the contact between the upwardly facing arcuate shouler **56** on the release lever **48** and the overlying under surface of the adjacent arcuate ledge **61** present in the existing gun frame. Thus, as the camming surface **47**, which possesses both vertically upward and horizontally rearward components, moves upwardly and forwardly when the sear bar slide is translated into "safe" position, the vertical arm **52** of the release lever **48** is urged first upwardly so that the shoulder **56** engages the overhanging ledge **61**. Further upward movement of the sear bar slide **32** then cams the lower end **50** of the lever **48** in an after direction. By bell-crank action the lever **48** then rocks about the contact between shoulder **56** and ledge **61** as a pivot, thereby depressing the forward end **57** of the horizontal arm **51** of the release lever **48**.

At the forward end **57** of the arm **51** there is provided a laterally inwardly extending finger **63** terminating in a stepped projection **64** overlying a corresponding stepped shelf **65** formed by machining a portion of an adjacent hold open latch **66**, or catch, or detent, capable of restraining the toggle train in open position under the circumstances shortly to be described.

When the forward end **57** of the horizontal arm **51** of the release lever is depressed, the stepped projection **64** on the lateral finger **63** forcefully urges the shelf **65** on the latch downwardly, threby withdrawing the hold open latch **66** from the notch in the bottom of the overlying breech block **22** and permitting the main recoil spring to close the toggle action **16**.

The toggle train mechanism **16** is held open after firing under either of the following circumstances: (1) when the last cartridge has been fired and the empty shell casing has been withdrawn from the firing chamber and ejected by the extractor as the toggle opens; or (2) a weak, or malfunctioning, hold open latch spring which allows the latch to protrude upwardly into the breech block notch, thereby permitting the latch to interfere with the return of the breech block.

The hold open latch **66** is mounted transversely on the after end of a hold open latch lever **71**, the forward end of the lever **71** being attached to the after end of a leaf spring **72**. The spring **72** biases the lever **71** downwardly so that under normal firing conditions the latch **66** occupies a recess **73** formed in a transverse web **74** spanning the opposite frame side rails **24**.

Should the hold open latch lever spring **72** become weak, or function improperly, causing the latch **66** to protrude upwardy beyond the upper margins of the latch recess **73**, the latch will interfere with the return of the breech block and thereby hold the toggle assembly in open position.

In like manner, when the last round has been removed from the magazine **26,** the spring-urged follower **29** ascends into its uppermost position, carrying with it a follower button **76,** or stud, which is connected to the follower **29** by a post **77** protruding laterally through an elongagted slot **78** in the nether side wall **79** of the magazine.

In moving into uppermost position, the button **76** engages the bottom edge of the latch lever **71;** and since the force exerted upwardly by the helical follower spring **81** is greater than the downward force of the latch lever leaf spring **72,** the latch **66** is elevated above the margins of the latch recess **73,** thereby interfering with closure of the toggle assembly.

It will be noted, at this juncture, that the latch **66** and the notch **67** in the breech block **22** are so contoured that when the breech block retracts after firing, the latch **66** is momentarily depressed out of the way while the breech block wipes over it; but after the breech block continues to move rearwardly, the latch **66** again rises to interfere with and bar the return of the breech block owing to the projection of the latch tip **83** upwardly into the notch **67,** in the manner of a latch and strike plate in a door lock.

By pressing or forcing the latch **66** downwardly into its recess **73,** the latch tip **83** is disengaged from the notch **67,** allowing the recoil spring to close the action and lock the breech block.

The latch **66** is selectively retracted in the manner previously described, namely, by switching the gun safety lever **31** from "fire" to "safe" position which, in turn, rocks the release lever **48** in a counterclockwise direction, as viewed in FIGS. **3** and **5.** This action depresses the finger **63** and urges the latch **66** downwardly against the upward urgency of the follower spring **81,** thereby releasing the breech block and allowing the toggle to close.

As an additional advantage the foregoing "safe" lever movement is automatically accompanied by placing the gun in the "safety" mode, thereby preventing premature or accidential firing.

Thereafter, by removing the empty magazine and replacing it with a magazine having one or more cartridges therein, followed by retracting and releasing the toggle and switching the safety lever **31** to "fire" position, firing can be resumed.

In the infrequent but possible alternative situation where the toggle is held open as a result of a malfunctioning latch spring (which can occur even when the magazine is not empty) the movement of the safety lever to "safe" position as previously described, will release the toggle and allow the action to close. Then, by returning the safety lever to "fire" position, firing can be resumed, bearing in mind that spring replacement is indicated.

What is claimed is:

1. In a Model P.08 Luger pistol including a frame, a toggle assembly having a breech block, a hold open latch mechanism including a catch biased downwardly by a latch spring, the catch being movable between an upper projected position engageable with the breech block and a lower retracted position removed from the breech block, a magazine including a follower spring and a stud capable of moving the catch from lower retracted position into upper projected position when the magazine is empty, a sear bar slide, and a thumb safety lever pivotally connected with the sear bar slide for selective movement of the sear bar slide between a lower "fire" position and an upper "safe" position, a toggle release and trigger lock comprising:

a. an L-shaped bell crank including a generally horizontal fore and aft arm extending to a forward end overlying a portion of the catch and generally vertical leg extending downwardly to a lower end engageable with the after edge of the sear bar slide, said bell crank being fulcromed on said frame for rocking movement between a first location in which said forward end of said fore and aft arm imposes no force on the underlying catch portion and a second location in which said forward end biases the catch downwardly from said upper projected position to said lower retracted position wherein the breech block is released and the toggle assembly is free to move forwardy to closed position; and,

b. a camming member carried on the sear bar slide for camming engagement with said lower end of said vertical leg of said bell crank, the after edge of said camming member being so contoured that in said lower "fire" position of said sear bar slide said bell crank is positioned in said first location and in said upper"safe" position of said sear bar slide said bell crank is positioned in said second location.

2. The combination as in claim **1** in which said lower end of said vertical leg includes flanges projecting forwardly to embrace the adjacent portion of said camming member and thereby prevent the lateral displacement of said vertical leg relative to said camming member.

3. The combination as in claim **2** in which said lower end of said vertical leg includes a laterally projecting shouler affording an upwardly facing surface in fulcromed engagement with the downwardly facing surface of an overhanging ledge formed in the gun frame, said camming member being effective upon preliminary elevation of the sear bar slide to urge said shoulder upwardly against said ledge and upon further elevation to rock said lower end of said vertical leg rearwardly with supervening force and thereby depress said forward end of said forward leg and the underlying catch portion into lower retracted position in opposition to the upward urgency of the follower spring in the magazine.

* * * * *