No. 814,749. PATENTED MAR. 13, 1906.

W. TRABUE.

AUTOMATIC GUN.

APPLICATION FILED MAR. 18, 1905.

FIG. 1.

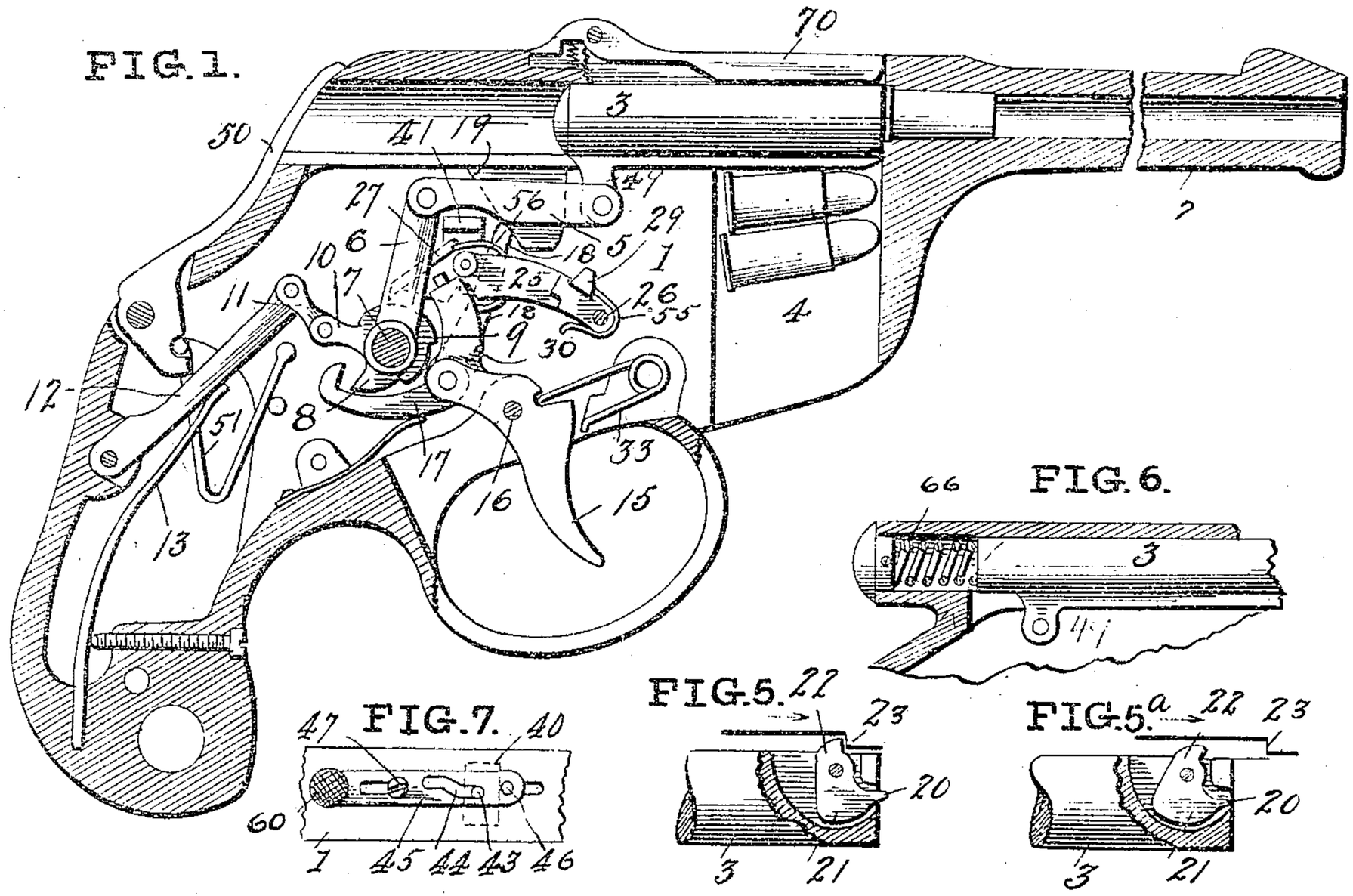

FIG. 6.

FIG. 7.

FIG. 5.

FIG. 5a.

FIG. 2.

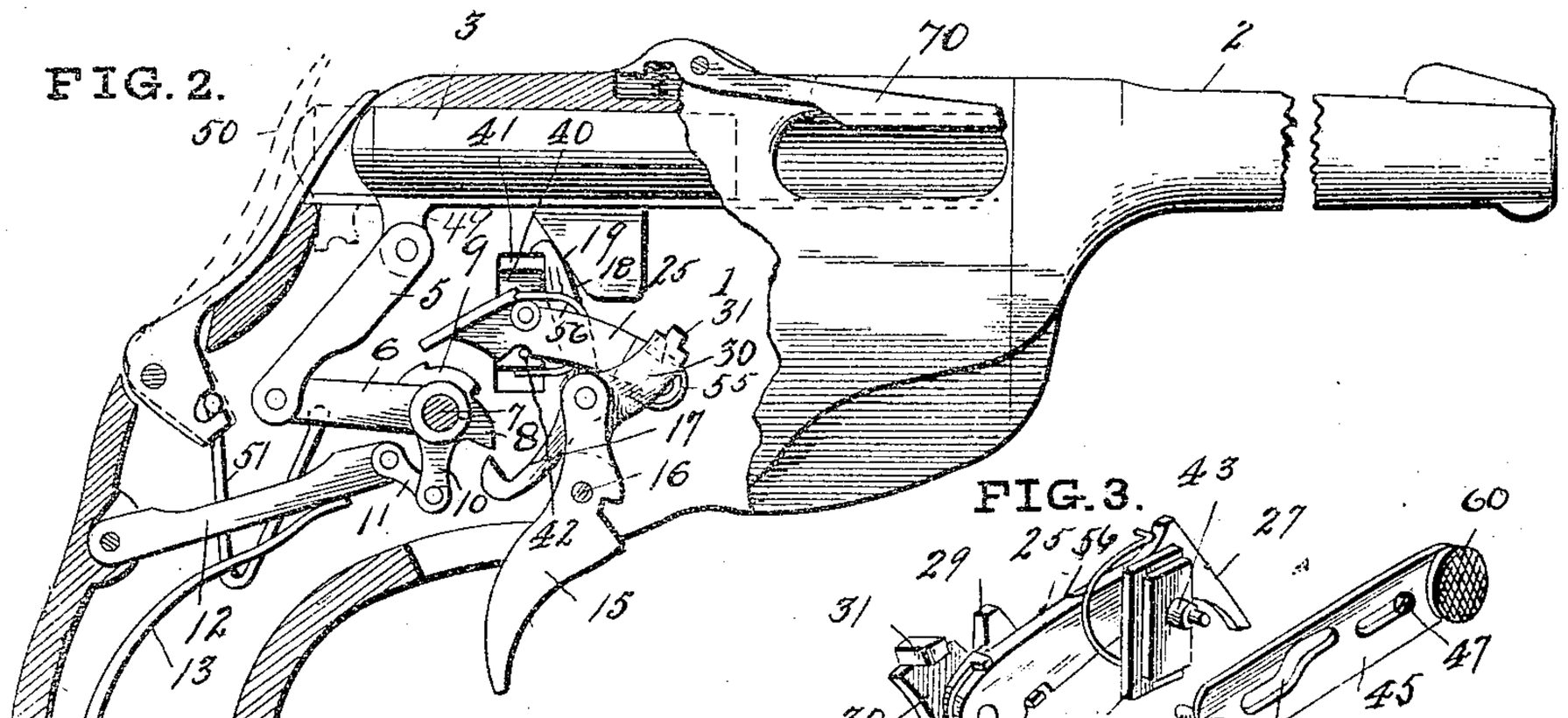

FIG. 3.

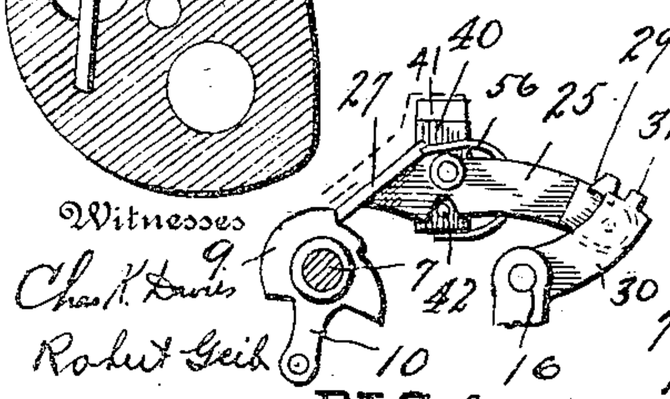

FIG. 4.

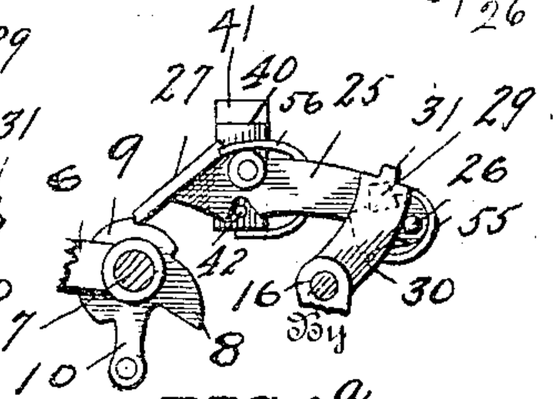

FIG. 4a.

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UNITED STATES PATENT OFFICE.

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AUTOMATIC GUN.

No. 814,749. Specification of Letters Patent. Patented March 13, 1906.

Application filed March 18, 1905. Serial No. 250,843.

To all whom it may concern:

Be it known that I, WILLIAM TRABUE, a citizen of the United States, residing at Louisville, in the county of Jefferson and State of Kentucky, have invented certain new and useful Improvements in Automatic Guns, of which the following is a specification.

This invention relates to automatic and hand-operated firearms.

The object of the invention is to produce a gun or pistol in which the recoil of the breech-bolt when the gun is fired may serve to eject the spent cartridge and place another in the barrel ready for firing or in which the trigger may be manipulated to effect a like result, in which latter case the spring which resists the recoil when the gun is fired need not be compressed by the manipulation of the trigger. Thus the weapon may be fired slowly shot by shot, entirely by trigger manipulation, or it may be fired in rapid succession until the cartridges are exhausted by the recoil mechanism.

The invention consists in certain constructions and mechanical combinations, substantially as will be described, and pointed out in the claims.

Figure 1 is a longitudinal central section of a pistol in which my invention is embodied, the breech being shown in closed position. Fig. 2 is a partial elevation and partial section of the same, the breech-bolt being shown in recoiled or open position. Fig. 3 is a perspective detail view showing parts of the breech-operating mechanism slightly separated, so that the construction may be better understood. Fig. 4 is a broken elevation of some of the operating parts of my device, and Fig. 4ª is a broken view of the same parts in different position. Fig. 5 is a broken sectional detail of the bolt and firing-piece, and Fig. 5ª is a similar detail of the same parts in a different position. Fig. 6 is a section of a modification of the recoil mechanism, whereby a coiled spring is employed to take up the recoil instead of the flat spring and lever of Figs. 1 and 2. Fig. 7 is a detail elevation of the sear-lifting mechanism outside the frame.

The numeral 1 indicates the frame, housing, or receiver. 2 denotes the barrel, and 3 the breech piece or bolt. This bolt reciprocates in the frame. The magazine 4 is under the bolt when the bolt is closed. Cartridges are lifted in the magazine by any suitable follower, as usual in what is known as a "box-magazine" gun. The follower is not shown, and some other parts are omitted for clearness of illustration, such parts being understood to be of any usual construction.

The breech-bolt 3 has a downwardly-extending arm 49, which is pivotally connected to a link 5, and this link 5 is pivoted to a lever 6, which is pivoted in the frame of the gun, as indicated at 7. The lever 6 has a hook 8, which projects below its pivot. A notched segment 9 is rigid with lever 6. Segment 9 has an arm 10, which is pivoted to a short link 11, and this link 11 is pivoted to lever 12, which lever 12 is pivoted to the frame or butt plate. A flat spring 13, secured in the frame, presses up against lever 12, thus drawing on link 11 and tending to rock the segment 9 and its connected lever 6, so as to close the breech-bolt. It will thus be seen that spring 13 acts on what may be termed a "compound" toggle-lever to close the bolt; but as the toggles of the lever system do not entirely straighten in closing the bolt the bolt is not really locked in closed position, but is merely pressed forward by the force of spring 13.

The trigger 15 is pivoted at 16 in the lower part of the frame. The cocking-hook 17 is pivoted to and carried by the trigger above the pivot 16, and this hook 17 has an upwardly-extending arm 18, which arm rides against an incline 19 in the frame. A pull on the trigger causes the hook 17 to engage the hook 8 on lever 6, thus rocking the lever 6 and its connected segment on the pivot 7 and causing the breech-bolt 3 to move from closed to open position—that is, from the position in Fig. 1 to the position in full lines, Fig. 2. When the hook 17 has moved slightly beyond the position shown in Fig. 2, it becomes detached from hook 8, and the spring 13 then becomes operative to close the breech-bolt unless it is held open by other mechanism to be explained.

The firing-pin 20 is on a pivoted piece 21, which is pivoted in the breech-bolt 3 and has an arm 22, which encounters an abutment 23

in the frame or at the rear of the barrel as the breech-bolt closes, thus bringing the pin against the cartridge to fire the same.

A sear 25 is pivoted at 26 in the frame and extends rearwardly from said pivot, its finger 27 engaging the notches in segment 9 when permitted, and thus acting to hold the toggle mechanism and bolt back, as in Fig. 2. The trigger 15 has a rigid arm 30 extending upward alongside of sear 25 and having a finger 31 extending over said sear in position to engage an inclined piece 29 on said sear. A pull on trigger 15 causes the breech-bolt to move back, as has been explained. Sear-finger 27 then engages a notch in the segment 9 and prevents the closing of the bolt (normally) until the arm 30 of the trigger (bearing the finger 31) moves forward and causes said finger 31 to engage the inclined piece 29 on the sear, thus lifting finger 27 of the sear from the notch in segment 9 and permitting spring 13 to close the breech-bolt, carrying a cartridge into the barrel when closing and firing the cartridge as the closing movement is completed. The finger of arm 30 rides along the face of the inclined piece 29 and is free from said piece 29 at the instant the firing takes place. The pull on the trigger cannot be released quick enough to permit finger 31 to again engage inclined piece 29 while the breech is moving back under the impulse of recoil. The trigger on its release is pressed forward at its lower end by spring 33, acting as usual, the finger 31 then riding past the piece 29, as is common in sear-and-pawl movements. When it is not desired that the sear 25 shall control the firing movement, the rear end of said sear is lifted so that it cannot engage the notches in segment 9. This is effected by means of a slide-plate 40, which has lugs 41 and 42 above and below the swinging end of the sear 25. A lug 43, projecting from the side of the slide-plate 40, extends through a slot in the frame and into a cam-slot 44 in a slide-bar 45 on the outside of the frame. The slide-bar 45 is guided by a pin 46 on the slide-bar, entering a horizontal slot in the frame, and a screw 47, passing through a horizontal slot in the slide-bar, so that the slide-bar can only move horizontally. Then as the lug 43 rests in the cam-slot 44 the movement of the slide-bar along the frame by pressure on button 60 serves to lift the plate 40 inside the frame, and this lifts the rear end of the sear 25, so that it cannot engage segment 9. When so lifted, the trigger pull operates to open the breech until hook 17 slips off from hook 8 and spring 13 closes and fires the gun. Thus by placing sear 25 in its engaging position the gun may be loaded and fired deliberately by the trigger pull, the pull serving to fire the gun in the same manner as a double-action revolver is fired, while if the sear be disengaged the first cartridge may be loaded and fired by the trigger movement, as has been explained, and then if the trigger be held back the other cartridges will be fired automatically in rapid succession, as will be explained.

It has been explained how the backward pull of the trigger releases the hook 17 from hook 8, thus permitting the breech to close, carrying a cartridge forward into the barrel and firing it. The backward pressure of the cartridge immediately throws the bolt open against the pressure of spring 13. As the bolt moves to the rear it encounters the recoil-lever 50, which is pivoted to the frame, and is pressed forward by the strong spring 51. The spent shell is ejected by any usual ejector, as is common. The magazine supplies a new cartridge in front of the bolt 3. The spring 51, acting on lever 50, throws the bolt rapidly forward, spring 13 assisting through the described train of mechanism. When the bolt carries a cartridge into the barrel and fires it, the operation is repeated, and so on as long as there are cartridges in the magazine.

The sear 25 may be held to working position by spring 55, and the finger 27 of said sear may be pressed to working position by a spring 56, mounted on block 40.

In Fig. 6 I illustrate a recoil-spring 66, on which the bolt acts directly instead of through a lever-arm, as 50.

In some of the figures I have omitted parts not considered essential, to avoid complication in the drawings.

It will be understood that when the gun is worked by the trigger pull the strong spring 51 is not compressed. The bolt moves to the rear far enough to permit the feeding of cartridges before compression of this spring takes place. The strong spring 51 when compressed by the breech-block under the sudden impulse of the explosion acts to throw the breech-bolt swiftly forward to closed position, and while the weak spring 13 may assist this closing movement probably such assistance is usually not needed; but when the gun is worked by the trigger movement the breech does not move back far enough to encounter the resistance of this strong spring.

A loading-gate 70 is shown at the side of the opening in the frame to prevent the escape of shells or cartridges except when thrown out by the ejector.

What I claim is—

1. The combination, in a firearm, of a bolt, a trigger and mechanism connected thereto by which the breech may be opened by the trigger movement, and a spring acted on by the recoil of the breech-bolt when thrown to extreme position, beyond that rear position controlled by the trigger movement, so as to close the bolt independently of the trigger movement.

2. In a gun, the combination of the breech-bolt, trigger, and toggle-lever mechanism by which the bolt may be opened by the trigger movement, a sear engaging the mechanism to hold the bolt retracted, and a spring to close the bolt when the sear is released by further trigger movement.

3. In a gun, the combination of a bolt, an operating-lever connected thereto, and a spring operating to close the bolt under normal conditions of hand manipulation, and a second spring operating on the bolt only at its extreme rearward movement such as is caused by recoil, to throw the bolt forward.

4. In a gun, a bolt, a trigger connected thereto by mechanism whereby the bolt may be opened by the trigger movement, a sear in position to normally engage the mechanism to hold the bolt open, and means outside the frame whereby the sear may be held inoperative and the mechanism left under control of the trigger.

5. In a gun, the combination of the breech-closing bolt, automatic means whereby the bolt may be closed from full-recoiled position, and a lever mechanism connected to the bolt by which the bolt may be opened far enough to load without engaging the automatic bolt-closing means.

6. In a gun, the combination of a breech-bolt, lever mechanism by which the bolt may be opened, a trigger engaging said lever mechanism to operate the same, a light spring acting on the lever mechanism to close the bolt, and a heavy recoil-taking spring acting on the bolt when at the rear of its trigger-operated position.

7. In a gun, the bolt and a lever mechanism operated from the trigger to open the bolt, a spring for closing the bolt, a sear engaging the mechanism to hold the bolt open, and means for setting said sear out of position for such engagement, all combined.

8. In a gun, the breech-bolt and its lever mechanism operating to open and close the same, a sear engaging said mechanism to hold the bolt open, a sliding piece in the frame by which said sear is thrown out of engagement, and means for locking said sliding piece.

9. In a gun, the breech-bolt and its operating lever mechanism, a sear engaging the mechanism to hold the bolt open, a slide-piece inside the frame by which said sear may be lifted, and a sliding bar outside the frame with which said slide in the frame engages through a slot in the frame.

In testimony whereof I affix my signature in presence of two witnesses.

WILLIAM TRABUE.

Witnesses:
W. C. TRABUE,
H. C. SEMPLE.