

May 28, 1940.

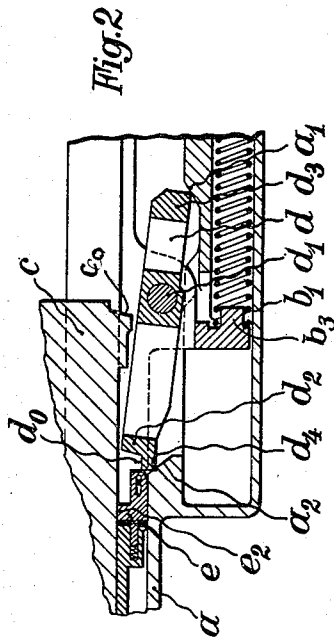
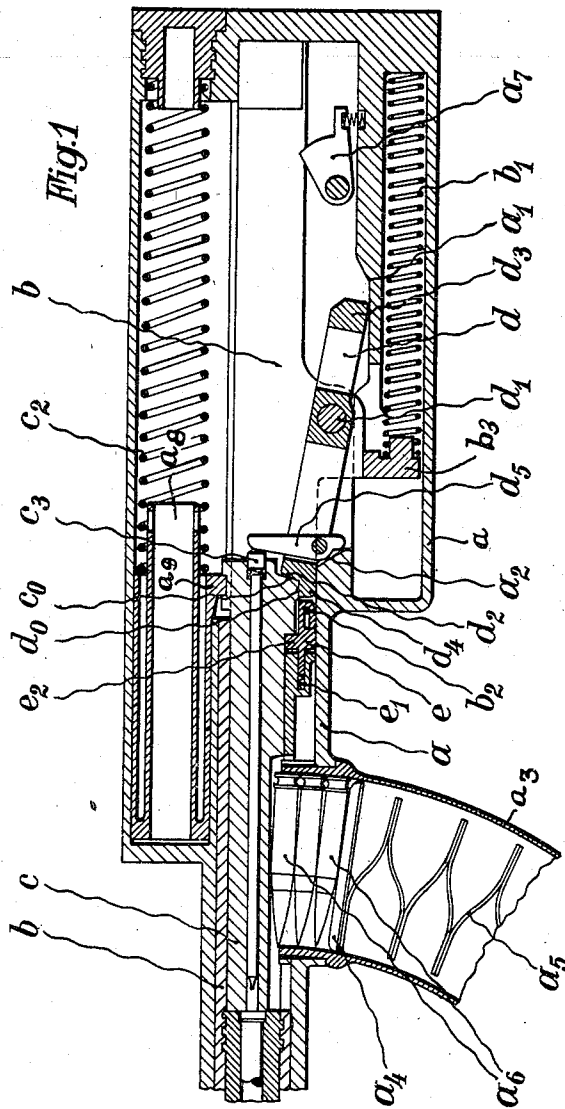
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2,202,201

AUTOMATIC GUN

Filed Dec. 23, 1937

2 Sheets-Sheet 1



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2 Sheets-Sheet 2

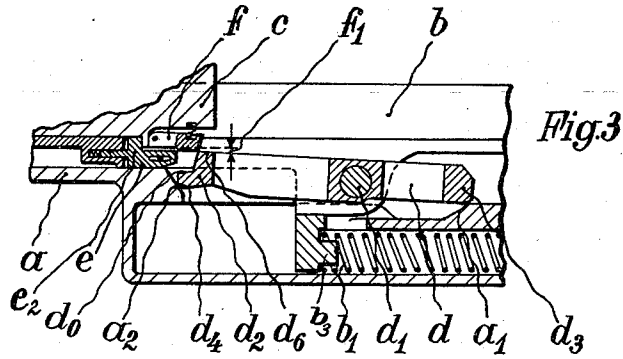


Fig. 3

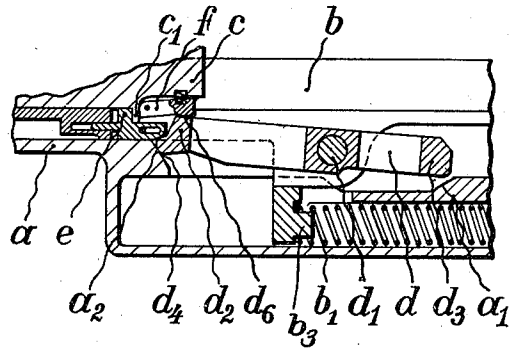


Fig. 4

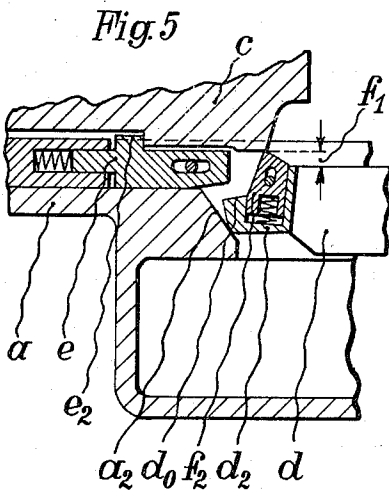


Fig. 5

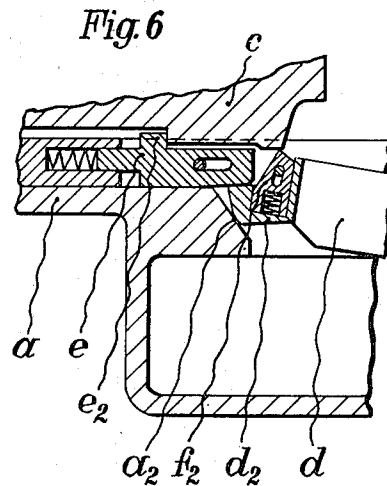


Fig. 6

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UNITED STATES PATENT OFFICE

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AUTOMATIC GUN

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4 Claims. (Cl. 42-4)

The invention relates to an automatic gun having a sliding barrel and a locked breech, having a locking member associated with a retaining device which holds the locking member
5 firmly in a position in which it does not hinder the movements of the breech bolt, after the breech has been released from the barrel. The retaining device is controlled by the relative movement between these parts. In such a gun
10 when the breech bolt is drawn back for cocking and loading in order to initiate the firing operation, then the locking effect between the barrel and bolt ceases immediately when the locking member slides off the breech bolt and before
15 the retaining device, which is designed as a slide, engages the locking member. In such a case the barrel actuating spring again moves the barrel, and the breech bolt forward while the locking member which has now swung into the locking position prevents the breech bolt during its
20 forward movement, to take its locked position in the barrel.

In order to exclude such possibilities of interruption of operation, movable members are
25 provided on the breech bolt or on the locking member which lengthen the mutual abutment surfaces of the bolt and the locking member, according to the present invention. The locking member, in its swinging out movement from the position in which it locks the bolt and barrel together, is in this manner constrained from performing an additional movement, after un-
30 locking has been effected, which allows the slide enough time to be thrust over the locking member and thereby to hold the barrel firmly in its rear end position, this being necessary for the correct return of the breech bolt into the barrel.

When the breech bolt returns into its proper or closed position in the barrel, the said movable members move aside in order to permit the breech bolt to move past to the locking member.

In the accompanying drawings which illustrate two typical embodiments of the invention—

45 Figure 1 is a fragmentary axial section of the gun with the parts at rest.

Fig. 2 shows in a fragmentary longitudinal section a gun in which the mechanism has attained a position wherein loading is prevented, and in which the breech bolt cannot run out properly into the forward end position of the barrel, while Figs. 3 and 4 show one typical embodiment of the invention having a device which prevents this faulty position at the moment of unlocking and the beginning of the
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locking of the bolt, and Figs. 5 and 6 show a modification of construction according to the invention with the gun in the same positions.

On the drawings is shown a barrel *b* mounted to slide axially in the housing *a*, while a breech bolt *c* is carried coaxially at the rear end of the barrel *b* and containing the firing pin *c*₃ adapted for a short back and forth movement therein. Beneath the breech bolt *c* is located in the barrel *b* a stop slide *e*, actuated by a spring *e*₁ and having a limited motion governed by a pin *b*₂ fixed in the barrel. In an opening at the underside of the housing *a* is inserted a magazine *a*₃ for the cartridges *a*₄, stacked upon a shelf *a*₄, which is pushed upwards by a spring *a*₅, so as to feed a cartridge at a time into the space formed between the barrel end and the forward end of the breech bolt *c*, when the latter has recoiled after firing the gun.

The barrel *b* has a lug *b*₃ hanging down into a chamber formed at the bottom of the housing *a*, between which lug *b*₃ and the rear wall of the housing *a* is inserted a spring *b*₁ urging the barrel *b* forward. A rocking latch *d* carried on the same lug *b*₂ is mounted to oscillate on a pin *d*₁ and the rocking lever *d* at its frame end carries the hammer or striker *d*₅.

In the upper part of the housing is formed another chamber containing a breech bolt actuating spring *c*₂ compressed between the rear wall of the chamber and the rear end of a spring retainer *a*₈ which has a lug *a*₉ permanently engaging a recess in the breech bolt *c* to lock them together, so that the recoil of the bolt *c* always compresses the spring *c*₂.

In the housing *a* is also pivoted a spring actuated trigger *a*₇ engaging in a notch of the barrel *b* to retain it in its rearmost position.

Upon firing the gun the breech bolt *c* and the barrel *b* will travel to the rear against the actuating springs *b*₁ and *c*₂. By means of the cooperation between the rear surface *d*₃ of the latch *d* and the shoulder *a*₁ near the bottom of the housing *a*, the front end surface *d*₂ of the latch *d* enters behind the surface *c*₀ of the breech bolt *c*. The breech bolt *c* will now be pushed still further back against the action of the bolt actuating spring *c*₂ and locked by the rear *a*₇ in position of rest with the trigger released, while the barrel *b* with the barrel returning spring *b*₁ compressed, is held back by means of the slide *e* set free from the breech bolt *c*, and is pushed over the forward end of the breech latch *d* actuated by the spring *e*₁.

When the trigger is pulled, the compressed

spring c_2 sends the breech bolt c forward, which brings a round of ammunition from the magazine a_3 to the barrel. Shortly before meeting the barrel it hits the projection e_2 of the slide e and pushes it forward, so that the forward end of the breech latch d , on account of the co-operation of the surfaces a_2 , d_4 , swings upwards and the surface d_2 is placed behind the end surface c_0 of the breech bolt c , so that the barrel b and the breech bolt c become fixedly locked to each other.

During the last part of the forward running of the barrel and the breech bolt, actuated by the combined action of the springs b_1 and c_2 , the hammer d_5 being hit by the inclined surface a_2 of the housing a swings forward on its pivot pin carried by the latch d and strikes the rear end c_3 of the firing pin, thereby firing the gun.

When the breech bolt c , which is mounted so as to be longitudinally displaceable with the barrel b in the gun housing a , is drawn back in order to cock the gun, the rear end d_3 of the breech latch d after a short common backward movement rides up on the ramp or shoulder a_1 of the housing, whereupon the front end d_2 of the latch d slides down from the rear abutment surface c_0 of the breech bolt c . At the same time the locking effect exerted by the latch d on the barrel ceases and the barrel again tends to move forward under the influence of the running out spring c_2 . Thus, when cocking, the barrel is not drawn back enough to allow a slide e to engage over a retaining projection d_0 at the front end of the latch d . Should the barrel now move forward, the latch d rides up on the front ramp a_2 and by thereupon swinging into it its locking position prevents the breech bolt c , when it runs out, from entering the barrel, while the slide e by sliding slightly backwards under the influence of its spring e_1 , may cause a jamming of the latch d in the position shown in Fig. 2, in which position the upper reverse surface of the latch d lies in the path of movement of the parts on the periphery of the breech bolt. The forwardly moving breech bolt c is thus wedged on the reverse surface of the latch d which lies in its path, and running out of the bolt into the bolting position is impossible. In order to overcome this obstruction to loading, the barrel must be returned so that the latch d can be moved back enough to allow the slide e to engage over the projection d_0 of the latch, so that the breech bolt c will be able to move unhindered to the forward position in the barrel.

Such gun jamming is avoided in the example of construction illustrated in Figs. 3 and 4 by employing a movable pawl which is arranged on the rear end of the breech bolt. When the gun is cocked by the breech bolt c being drawn back, the tongue f maintains the breech bolt c and the barrel casing b locked to each other until the latch d receives a swinging movement sufficient to cause the slide e to engage over the supporting bolt projection d_0 . When the bolt and barrel are unlocked, the tongue f , under the influence of a spring, is moved with the catch d and compels the front end of the latter to move down to an extent indicated by f_1 and this movement allows the slide e enough time, before a forward movement of the barrel and a

return swinging movement of the latch d occurs, to move over the front projection d_0 and to hold the barrel in the end position necessary for the subsequent proper running out of the breech bolt c .

When the running out movement of the breech bolt c occurs, the projection c_1 on the bolt thrusts the shoulder e_2 of the slide, located in the path of the projection c_1 , against the influence of the spring biasing the slide, out of the position of engagement of the slide over the projection d_0 of the latch. The breech bolt c then moves forward into its front end position in the barrel and is now moved together with the latter into the firing position, the latch d with its inclined shoulder d_4 being swung up by the housing guide a_2 into the position in which it bears behind the tongue f .

In the example of construction illustrated in Figs. 5 and 6, instead of the pawl or tongue f being pivotally mounted on the breech bolt, a spring-urged slide f_2 is mounted in the head d_2 of the latch d .

Fig. 5 shows the position, at the moment of unlocking the bolt and barrel and the additional movement f_1 rendered possible by the spring-urged slide f_2 , and Fig. 6 the moment shortly before the beginning of the locking of the bolt and barrel.

Having now particularly described and ascertained the nature of my said invention and in what manner the same is to be performed, I declare that what I claim is:

1. An automatic gun having a sliding barrel and a breech bolt longitudinally movable therein, comprising a latch between the barrel and the breech bolt, a slide provided with a spring to hold the latch in position releasing the breech bolt and which is releasable against the action of said spring by the forward movement of the breech relatively to the barrel, and a resilient member associated with the breech bolt and the latch extending the period of contact between the breech bolt and the latch in order to secure the latch in position out of the path of the breech bolt movement.

2. In an automatic gun according to claim 1, in which the resilient member is in the form of a tongue mounted on the breech bolt to increase the length of contact with the breech bolt, said tongue being movable toward the latch by a spring.

3. In an automatic gun according to claim 1, in which the resilient member is in the form of a spring-urged member mounted in the front end of the latch to increase the period of contact of the latch and being movable by its spring in the direction toward the breech bolt.

4. An automatic gun having a sliding barrel and a breech bolt longitudinally movable therein, comprising a latch between the barrel and the breech bolt, means to hold the latch in position releasing the breech bolt and which is releasable by the forward movement of the breech relatively to the barrel, and a resilient member associated with the breech bolt and the latch extending the period of contact between the breech bolt and the latch in order to secure the latch in position out of the path of the breech bolt movement.

HERMANN HENNING.