

No. 830,511.

PATENTED SEPT. 11, 1906.

H. LEHMANN.
AUTOMATIC GUN.
APPLICATION FILED AUG. 24, 1905.

2 SHEETS—SHEET 1.

FIG. 1.

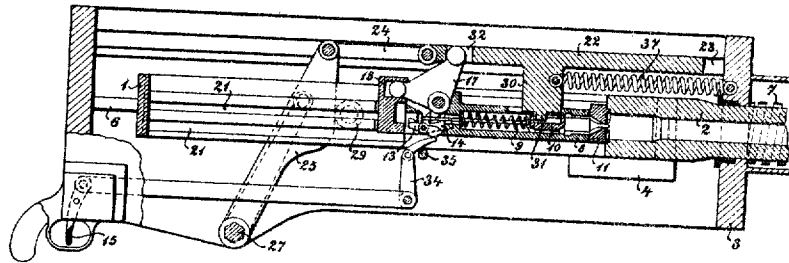


FIG. 2.

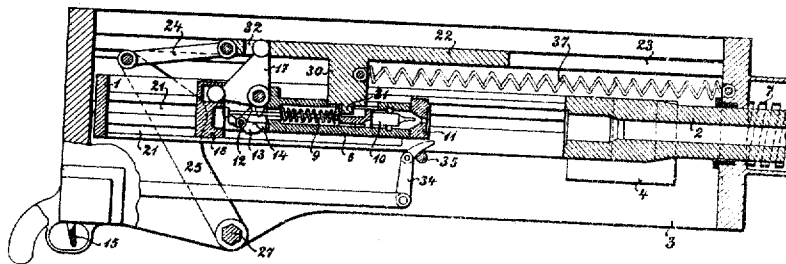


FIG. 3.

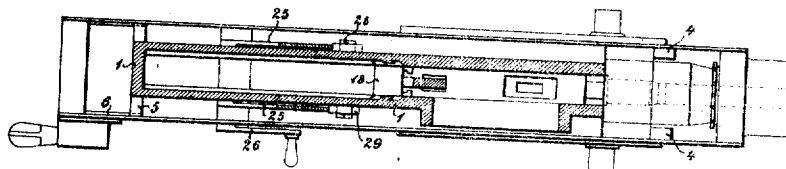


FIG. 4.

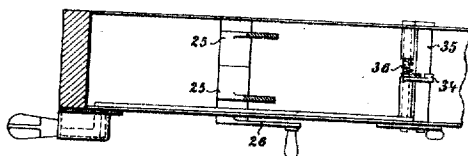
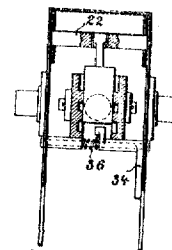


FIG. 5.



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2 SHEETS—SHEET 2.

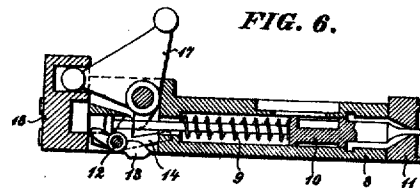


FIG. 6.

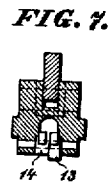


FIG. 7.

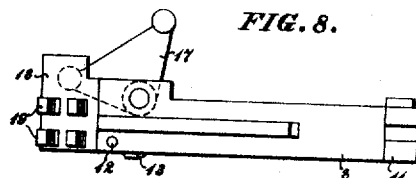


FIG. 8.

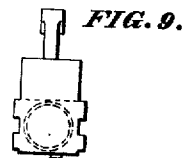


FIG. 9.

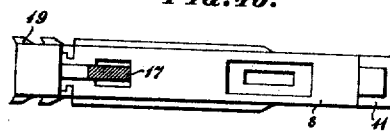


FIG. 10.

FIG. 17.

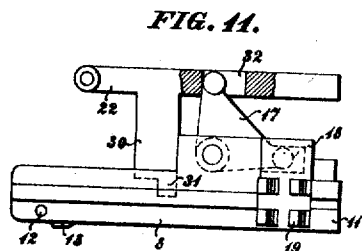


FIG. 11.

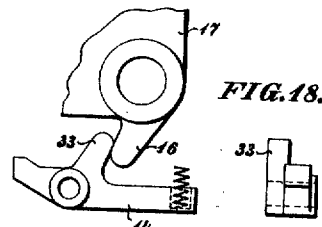


FIG. 18.

FIG. 19.

FIG. 20.

FIG. 12.

FIG. 13.

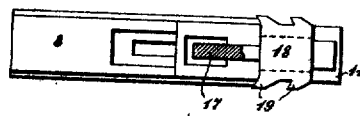


FIG. 14.

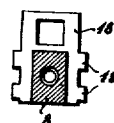


FIG. 15.

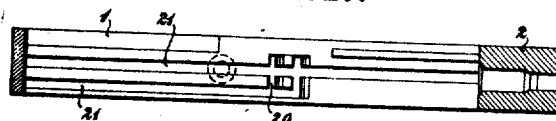
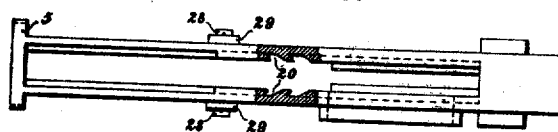


FIG. 16.



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AUTOMATIC GUN.

No. 830,511.

Specification of Letters Patent.

Patented Sept. 11, 1906.

Application filed August 24, 1905. Serial No. 275,633.

To all whom it may concern:

Be it known that I, HERMANN LEHMANN, a subject of the King of Prussia, German Emperor, and a resident of Magdeburg, Kingdom of Prussia, Empire of Germany, have invented certain new and useful Improvements in Automatic Guns, of which the following is a specification.

This invention has for its object to improve automatic firearms or guns—that is, those guns in which all the displacements of the separate parts for cocking the firing-pin, opening the breech, ejecting the cartridge-cases, inserting the cartridges, closing the breech, and firing the gun are automatically effected, some of the improvements being also applicable to guns which are not automatic.

The accompanying drawings show an automatic gun provided with a recoiling barrel, although it is to be understood that any other part which operates automatically upon firing may be substituted therefor.

Figure 1 is a longitudinal section through the breech after firing, but with the breech still closed. Fig. 2 is a similar section showing the breech open and the firing-pin cocked. Figs. 3 and 4 are horizontal longitudinal sections. Fig. 5 is a cross-section through the breech. Figs. 6 to 10 show in longitudinal section and on a larger scale the breech-block removed from the gun. Figs. 11 to 13 show in sectional elevation, plan, and longitudinal section a modification of the locking-bolt for the breech-block. Figs. 14, 15, and 16 show the barrel extension in longitudinal section, rear elevation, and plan; and Figs. 17 to 20 represent the firing mechanism.

The gun-barrel 2, connected with the barrel extension 1, is guided in the front wall of the gun-casing 3 and also by two guide and stop angle-pieces 4 and is guided at the rear by projections 5, arranged upon the barrel extension (see Figs. 14, 15, 16) and which engage with corresponding guide-strips 6 of the casing 3. The forward movement of the barrel after recoil is effected by the spring 7 in the known manner.

The firing-pin 10 is arranged in the bore of the breech-block 8 and is subject to the influence of the spring 9, (see Figs. 1, 2 and 6 to 10, the forward movement of this pin being limited by the breech-block head 11. Upon the

axle 12 the two sears—firing-sear 13 and automatic sear 14—are rotatably mounted, the former being actuated by the trigger 15. The sear 14 retains the firing-pin 10, which is cocked before the beginning of the return movement of the breech-block and is held in this position until the breech is again locked. Then, but not till then, the sear 14 can be automatically released by the finger 16 on the angular lever 17, pivoted on the breech-block, and as said lever is not actuated by hand it therefore prevents premature release of the firing-pin.

The locking means comprises a locking-bolt 18, slidably arranged on the rear part of the breech-block 8 in a guide transverse of the axis of the barrel. The projections 19 of this bolt engage in corresponding lateral locking-recesses 20, Figs. 14 and 15, of the barrel extension 1 when the breech is locked; but when the breech-block is released they are able to travel with this latter in the plurality of guide-grooves 21 on each side of the breech-block in the said barrel extension. In order to avoid a one-sided straining of the locking-bolt, the recesses 20 and the projections 19 are symmetrically arranged on opposite sides of the breech-bolt. Further, the projections are rearwardly inclined from their bases, the recesses being likewise inclined to conform to the shape of the projections.

The slide 22, Figs. 1 and 2, which is displaceable in the guides 23 of the casing 3, is held by the spring 37 in its forward position, as represented in Fig. 1. The link 24 connects it with the swinging levers 25, which, together with the hand-lever 26, are fixed upon the pin 27, which is rotatably mounted in the casing. The rollers 29 are mounted upon the pins 28 on the sides of the barrel extension, Fig. 3, and these rollers in the recoil of the barrel press against the widened portions of the swinging levers 25 and cause the rearward movement of the slide 22, and consequently the displacement of the parts of the breech mechanism into the position represented in Fig. 2. Although the gun-barrel only moves a short distance with the barrel extension 1, yet the *vis viva* of the slide 22 and of the breech-block 3 will cause these latter to move through the longer distance shown in Fig. 2. When the slide 22 thus moves back, (its projection 30 engag-

ing in the breech-block 8 and its projection 31 in the firing-pin 10 and the said slide displacing the angular lever 17, mounted in the breech-bolt,) in the first place the firing-pin is actuated by the projection 31 and cocked, so that the noses of the two sears 13 and 14 are able to come in front of a corresponding seat on the firing-pin. In the meantime the right-hand face of the slot 32 in the slide comes against the lever 17 and displaces it in such a manner that it depresses the locking-bolt 18. The path for the recoil of the breech-block is then free. The left-hand face of the projection 30 now strikes against the corresponding face of the recess in the breech-block and draws this latter back into the position shown in Fig. 2. Space is therefore provided for the ejection of the empty cartridge-case and the introduction of a fresh cartridge.

In Figs. 11, 12, and 13 a modified arrangement of the locking-bolt is illustrated. In this case it is arranged behind the breech-block head. It embraces the breech-block and upon the unlocking of the breech is displaced, not downward, as previously, but upward. When, after firing, the next cartridge has been brought in front of the breech-block, the slide is again drawn forward by the spring 37. The left-hand face of the slot 32 then presses against the lever 17, and as this latter is now prevented from rotating by the locking-bolt 18, the projections 19 of which slide in the longitudinal grooves 21, it carries the whole breech-piston and the cartridge forward. When the breech-block head 11 strikes against the barrel or against the base of the cartridge, the position of the projections 19 corresponds with the position of the transverse grooves 20. The breech-block will therefore remain stationary, during the further displacement of the slide. The locking-bolt 18 is, however, raised by the angular lever into the position represented in Fig. 1 and the breech-block is thereby locked. The projection 31 of the slide 22 permits the firing-pin 10 to slide forward to such an extent that the sears 13 and 14 bear against their seat on the firing-pin. In the latter part of its movement the slide has rotated the angular lever to such an extent that the finger 16 on the same bears against the projection 33 of the sear 14 (see Fig. 17) and turns the latter until it releases the firing-pin, which up to then it had held. The said bolt is now only kept cocked by the firing-sear 13, which is adapted to be actuated by hand. Single firing may now be effected by pressing the trigger 15. If, however, the pressure exerted upon the trigger is continued, the sear 13 is always released as soon as it passes the intermediate lever 34, connected with the trigger upon the forward movement of the breech-block. The firing-

pin is then only acted upon by the sear 14. Owing to the fact that each time the breech is locked the sear 14 is automatically released by the finger 16 of the lever 17, automatic firing of the gun may be effected by a constant pressure upon the trigger 15.

In addition to the sears the projection 31 on the slide also prevents the uncocking of the firing-pin during the rearward and forward movement of the breech-block, because during the whole of this time its left-hand face presses against the corresponding face of the notch or recess in the firing-pin. Only during the locking does sufficient freedom or play exist between these two faces to permit the firing-pin to spring forward.

The bolt 35, which connects the side walls of the case, one with the other likewise limits the swing of the intermediate lever 34. The spring 36 tends to rotate this lever in a right-handed direction.

As has already been stated in the introduction hereto, the recoiling barrel may be replaced by the action of a gas-pressure piston, which forces back the lever 25 in any suitable manner.

Having now described my invention, what I claim as new is—

1. In an automatic gun, the combination with a part moving automatically upon firing and a breech-block, of a swinging lever moved by said part in one direction, a slide controlling the opening and closing movements of the breech-block, movable and mounted independently of the breech-block and operated by the swinging lever, and a spring moving the slide in the other direction.

2. In an automatic gun, the combination with a part moving automatically upon firing, and a breech-block, of a swinging lever moved by said part in one direction, a slide movable and mounted independently of the breech-block, controlling the opening and closing of the breech-block, and operated by the swinging lever, a link connecting the swinging lever and the slide, and a spring moving the slide in the other direction.

3. In an automatic gun, the combination of the swinging lever operated by a part moving automatically upon firing, a breech-block, locking means for the block, and a slide movable and mounted independently of the breech-block and connected with the swinging lever and to the breech-block for transmitting motion to lock and unlock the block.

4. In an automatic gun, the combination with the barrel of the swinging lever operated by a part moving automatically upon firing, a breech-block, locking means for the breech-block, and a slide mounted independently of the breech-block, connected with the swinging lever and transmitting motion to lock and unlock the breech-block and to move the breech-block to and from the breech of the barrel.

5. The combination with the breech-block and a slide mounted independently of the breech-block and operated automatically upon the firing of the gun, of a locking means carried by the breech-block, and an angle-lever pivoted to the breech-block and connected to the locking means and to the slide to cause a locking and unlocking of the breech-block.
6. The combination of the frame, the swinging lever pivoted to the frame, a recoiling barrel for causing the swinging of the lever, a slide mounted on the frame and connected to the lever to be operated by the same, a breech-block, and locking means for the breech-block controlled by the slide.
7. The combination with the frame, the recoiling-barrel extension, a breech-block carried thereby, and movable thereon, and locking means for the breech-block, of a slide mounted on the frame independently of the breech-block, a pair of swinging levers, one arranged on each side of the barrel extension, pivoted to the frame, and engaged by the said extension to be moved thereby, connection between said swinging levers and the slide, and connection between the slide and the breech-block-locking means to cause a locking and unlocking of the breech-block.
8. The combination with the frame, the recoiling-barrel extension, and a breech-block carried thereby and movable thereon, of a slide mounted on the frame above the breech-block, a pair of swinging levers, one arranged on each side of the barrel extension, pivoted to the frame and engaged by said extension to be moved thereby, connection between the levers and the slide, and connection between the slide and the breech-block for causing the movement of the breech-block on the barrel extension.
9. In an automatic gun, the combination with the frame, the barrel extension, and a breech-bolt movable thereon, of a pair of levers pivoted to the frame on opposite sides of the barrel extension and operated by a part movable automatically upon firing, and a slide mounted independently of the breech-block and connected with the breech-block and with the levers.
10. In a gun, the combination with the breech-block, of a barrel extension provided with guide-grooves on opposite sides and lateral recesses leading into the grooves, said recesses extending rearwardly, and locking projections carried on opposite sides of the breech-block extending rearwardly from their base and movable into the guide-grooves to permit the breech-block to move away from and toward the breech and into the lateral recesses to lock and unlock the breech-block.
11. The combination with a breech-block, of a locking-bolt carried thereby and movable thereon, a plurality of guides for the breech-block on each side thereof, and a plurality of projections on each side of the locking-bolt, movable to and from the guides to cause the locking of the breech-block.
12. The combination with a breech-block, of guides on which the breech-block travels located on each side of the breech-block, and a locking-bolt having a plurality of projections for each guide; said guides being provided with lateral recesses into which the projections move to lock the block.
13. In a gun, the combination with the breech-block, and a barrel extension having guide-grooves on each side for the breech-block and lateral locking-recesses, of a vertically-sliding locking-bolt carried by the breech-block and provided with projections on opposite sides movable in the lateral locking-recesses to lock the bolt and into the guide-grooves to permit the breech-block to move.
14. In an automatic gun, the combination with a slide moved in one direction automatically upon the firing of the gun, of a breech-block, a locking means carried by the breech-block, a firing-pin, an automatic sear, and an angle-lever operated by the slide, controlling the locking means, and operating the sear.
15. In an automatic gun, the combination with a part moving automatically upon firing, and the breech-block carrying a firing-pin, of a swinging lever moved by the automatically-moving part, a slide movable upon the frame of the gun, a spring moving the slide in one direction, a link connecting the slide and the swinging lever, a locking-bolt carried by the breech-block, an angle-lever pivoted on the breech-block controlling the locking-bolt and engaged by the slide, and a projection carried by the slide engaging the firing-pin to cock it, and engaging the breech-block to move it to and from firing position.

The foregoing specification signed this 9th day of August, 1905.

HERMANN LEHMANN.

In presence of—

WILHELM FLEISCHBACH,
MARIA SCHNEIDER.