A. A. K. HEINEMANN.

MACHINE GUN.

APPLICATION FILED FEB. 25, 1914.

1,123,530.

Patented Jan. 5, 1915.

4 SHEETS—SHEET 1.

Fig. 1.

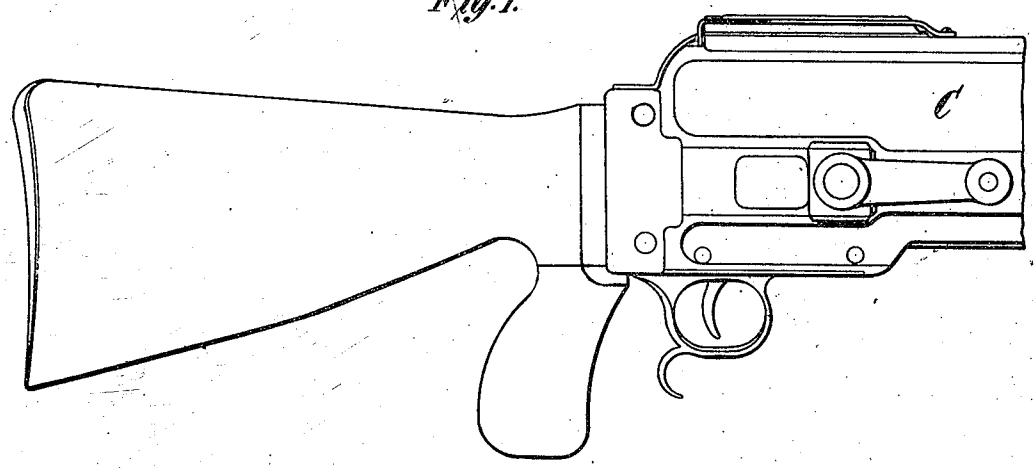
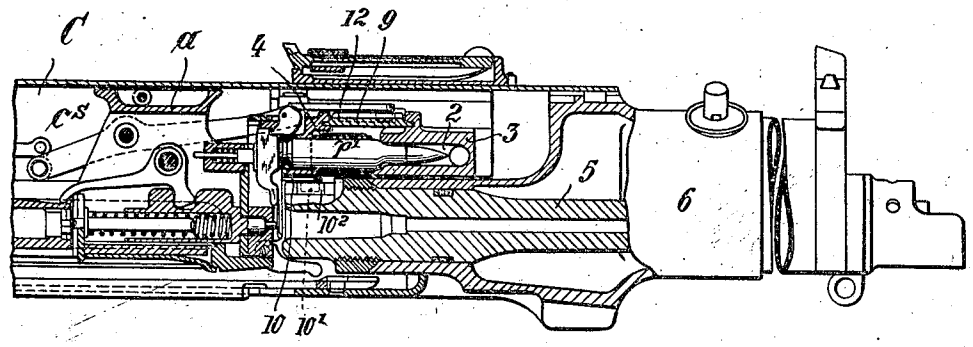


Fig. 2.



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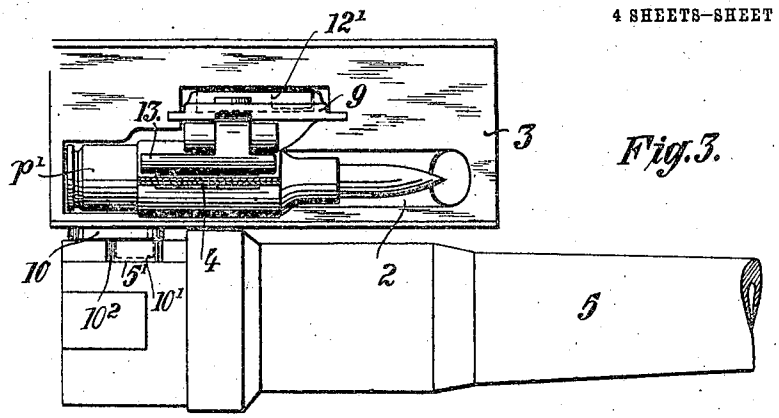


Fig. 3.

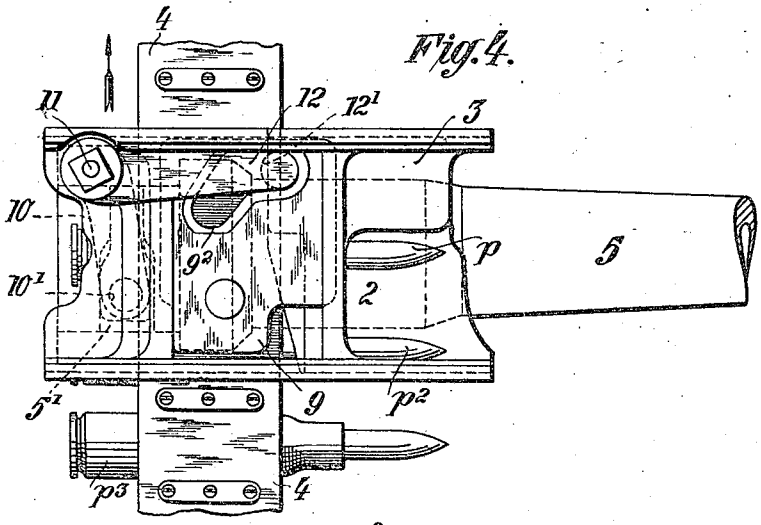


Fig. 4.

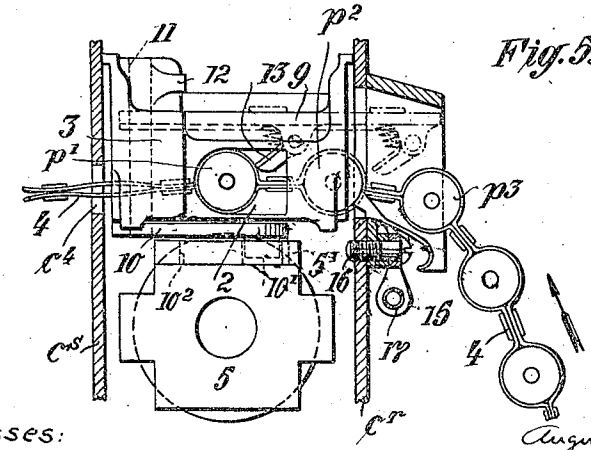


Fig. 5.

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4 SHEETS—SHEET 3.

Fig. 6.

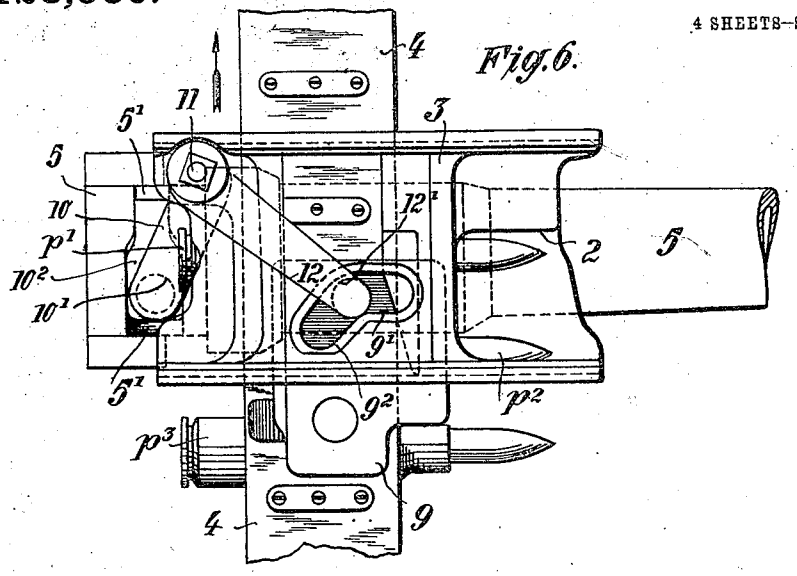
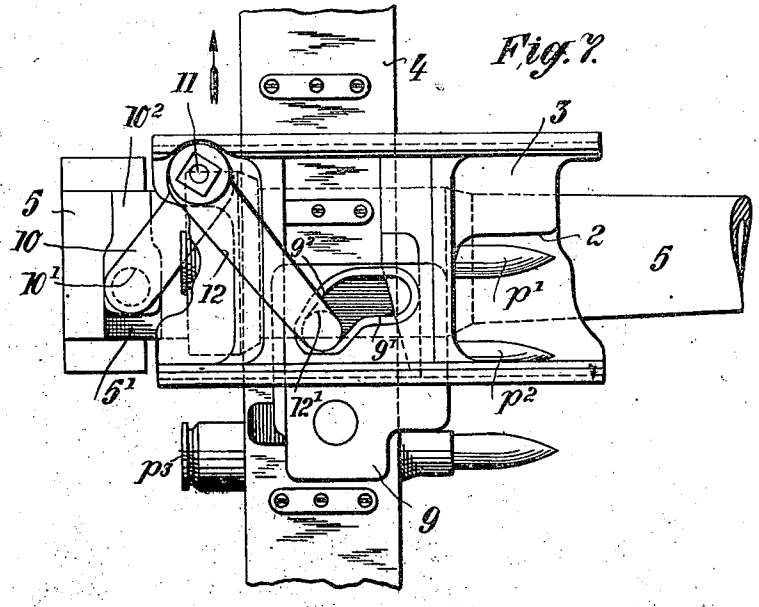


Fig. 7.



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4 SHEETS—SHEET 4.

Fig. 8.

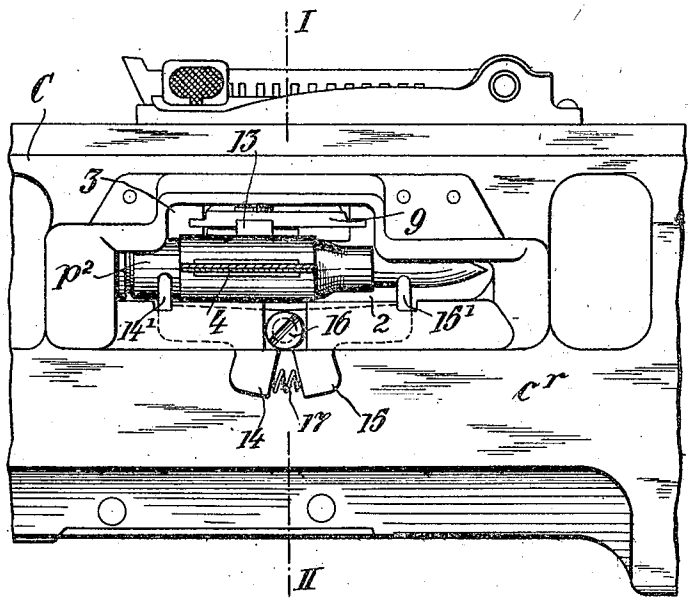
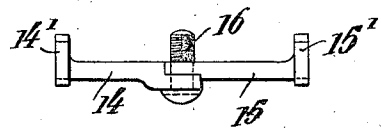


Fig. 9.



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UNITED STATES PATENT OFFICE.

AUGUST ALBERT KARL HEINEMANN, OF BERLIN, GERMANY, ASSIGNOR TO DEUTSCHE WAFFEN- UND MUNITIONSFABRIKEN, OF BERLIN, GERMANY.

MACHINE-GUN.

1,123,530. Specification of Letters Patent. Patented Jan. 5, 1915.

Original application filed August 7, 1913, Serial No. 783,471. Divided and this application filed February 25, 1914. Serial No. 820,807.

To all whom it may concern:

Be it known that I, AUGUST ALBERT KARL HEINEMANN, a citizen of the German Empire, residing at Berlin, in the German Empire, have invented certain new and useful Improvements in Machine-Guns, of which the following is a specification.

The present invention relates to improvements in machine guns and refers more particularly to an improved cartridge feeding mechanism of the class in which the belt-slide which after each firing feeds the cartridge belt stepwise through the transverse opening of the cartridge feeding casing, receives its transverse to and fro movements in the cartridge feeding casing by the movements of the sliding barrel.

The object of my invention is to provide means whereby the length of the stroke of the belt-slide is terminated and made independent of the varying length of the recoil of the barrel, so that the feeding stroke of the belt-slide will be in all cases the same, regardless of whether the length of the recoil of the barrel exceeds the normal recoiling length or not. And with this end in view my invention consists in certain novel features of construction and combinations of parts which allow of a certain idle motion in the train of the connecting means between the belt-slide and the sliding barrel, so that when the belt-slide has completed its outward stroke necessary for seizing a new cartridge, the influence of the still further recoiling barrel upon the belt-slide ceases, and the latter remains stationary in its outer position, until the barrel has completed its recoil and has traveled of its subsequent forward movement a length corresponding to the idle motion of the connecting means. At this time the forward sliding barrel begins to act upon the belt-slide in the opposite direction and effects the inward stroke of belt-slide.

In order that my invention may be more fully understood I shall now proceed to describe the same by way of example in detail and for that purpose shall refer to the accompanying sheets of drawings in which:—

Figure 1 is a side elevation of the rear part and Fig. 2 a longitudinal section of the front part of a hand machine gun provided with a cartridge feeding mechanism constructed in accordance with and embodying my invention, in this Fig. 2 the lock is in the closed position and the firing pin uncocked; Fig. 3 is a side elevation, Fig. 4 a top plan view and Fig. 5 a rear elevation of the cartridge feeding mechanism drawn on a larger scale; the last view, being partly in section, is taken on the line I—II of Fig. 8; Fig. 6 is a top plan view of the cartridge feeding mechanism, similar to Fig. 3, but showing the barrel in its normally recoiled position and the belt-slide in its outer end position; Fig. 7 is a top plan view similar to Fig. 6, but the barrel being in a still further recoiled position; Fig. 8 is a side elevation of a part of the gun disclosing the belt locking device; and Fig. 9 is a detailed top plan view of the two belt-levers.

Similar letters and figures of reference refer to similar parts throughout the several views.

The cartridge feeding mechanism arranged in front of the lock *a* (Fig. 2) above the sliding barrel 5 and at the rear end of the water jacket 6 consists of a flat casing 3 having a transverse aperture through which the cartridge-belt 4 passes. As seen from the rear, the right-hand portion of this transverse aperture has the form of a cartridge bed 2 for receiving the new cartridge supplied whenever the belt is fed forward in the direction of the arrow shown in Figs. 4–7. The left-hand portion of the aperture is only so large that the belt emptied of cartridges can conveniently pass through it. The belt-slide or pusher 9 is located in the casing 3 above the said transverse aperture and is shifted when the barrel slides. For this purpose a vertical crank-shaft 11 (Figs. 4–7) is mounted in the casing 3, and a pin 10^1 of its lower crank-arm 10 engages in a slide 10^2 displaceable in the transverse recess 5^1 of the barrel, while a pin 12^1 of its upper crank-arm 12 engages in an angular slot or groove 9^1, 9^2 in the belt-slide 9. The part 9^1 of the slot which effects the displacement of the belt-slide, is parallel to the axis of the barrel, while the non-effective part 9^2 of the said slot runs parallel to the circle described by the crank pin 12^1. This slide 9 is provided at its right-hand end with a spring-influenced feeder-lever 13.

After firing a shot the lock *a* and the barrel 5 slide at first backward together, where-

upon they separate in well known manner and the barrel comes to a standstill. By the recoil of the barrel the crank-shaft 11 is rocked by means of the arm 10, whereas the arm 12 pushes the belt-slide outward. When the pin 12^1 has passed the length of the effective part 9^1 of the slot the outward movement of the belt-slide 9 ceases. At this time the parts are in the position shown by Fig. 6 and in dotted lines by Fig. 5. The spring-influenced lever 13 of the slide 9 has passed over and engaged the next cartridge p^2, while the lock which in the meantime has separated from the barrel 5, slides farther backward and withdraws the preceding cartridge p^1 out of the cartridge-feeder and the belt 4 in known manner. While the lever 13 slides over the cartridge p^2 the latter bears against the lugs 14^1, 15^1 of bell-crank belt-levers 14 and 15, (Figs. 5 and 8), which lugs prevent the cartridge p^2 and the belt 4 from yielding to the right. The said levers 14 and 15 are pivoted on a screw-pin 16 fastened in the right-hand side wall c^7 of the receiver C (Figs. 2 and 8).

At the termination of the outward motion of the belt-slide 9 the recoil of the barrel 5 should also terminate. At the length of the recoil of the barrel is not always the same but varies in some limits, so it may happen that the recoiling barrel acts too long upon the belt crank device 10, 11, 12, whereby the belt-slide 9 will be pushed outward too great a distance, so that its lever 13 may perhaps engage the second subsequent cartridge p^3 (Fig. 5). To prevent such occurrence which would bring the whole gun out of function, and to obtain in all events a certain predetermined length of outward movement of the belt-slide in spite of the varying length of the recoil of the barrel the effective slot 9^1 in the belt-slide 9 is provided with a non-effective part 9^2 in such a manner that during the last part of the rearward rotation of the crank 10, 11, 12, and consequently also during the first part of its forward rotation, this crank leaves the belt-slide uninfluenced, so that when the latter has reached its required extreme outer position, the barrel can slide back still farther without acting on the belt-slide, (Fig. 7).

If the barrel is pushed forward by closing the lock the crank 10, 11, 12, will be rotated in forward direction but it does not act upon the belt-slide as long as the crank pin 12^1 is moving in the part 9^2 of the slot, but when the crank pin 12^1 enters into the effective part 9^1 of the slot the forward rotation of the crank device will cause the inward movement of the belt-slide. During this inward movement the feed-lever 13 drives the seized cartridge p^2 and the cartridge-belt with it and brings the cartridge into the cartridge-bed 2 of the casing 3 in which the cartridge p^1 was previously located. The part of the belt emptied of cartridges slides a corresponding distance through the outlet c^4 (Fig. 5) in the left-hand side wall c^3 of the receiver C.

If it is desired to withdraw the cartridge-belt to the right, it is only necessary to press together the lower arms of the belt-levers 14 and 15 against the action of a spring 17. The upper ends or lugs 14^1, 15^1 of these levers are thereby rocked downward and the lugs thus removed out of the path of the cartridges, so that the belt can be unimpededly withdrawn toward the right. The lugs 14^1, 15^1 are beveled on their outer sides, so that the cartridges when pushed forward that is to say inward by the feed-lever 13 can readily slide over them.

Subject-matters of invention disclosed herein, but not claimed form the subject-matters of my prior application Ser. No. 783,471, filed August 7th 1913 and of two other contemporary divisional applications Serial Nos. 820,805 and 820,806 both filed February 25, 1914.

I claim:

1. In a machine gun, the combination of a sliding barrel, a stationary feeding casing, a cartridge belt transversely movable through said casing, a belt-slide adapted to be moved transversely in said casing to intermittently feed said cartridge belt, a device connected with said barrel and actuated thereby and means for connecting said slide with said device whereby the recoil of the gun is immediately transmitted to said slide and whereby the latter remains at rest during the finish of the said recoil and during the beginning of the forward movement of the barrel.

2. In a machine gun, the combination of a sliding barrel, a stationary feeding casing, a cartridge belt transversely movable through said casing, a belt-slide adapted to be moved transversely in said casing to intermittently feed said cartridge belt, said belt-slide being provided with a guide-slot having an effective portion, and a non-effective portion, a crank-shaft journaled in said feeding casing, an arm carried by said shaft and connected with said sliding barrel, a second arm carried by said shaft and movable in the effective portion of said slot immediately at the beginning of the recoil of the barrel to actuate said belt-slide and in the non-effective part of said slot during the finish of said recoil whereby said slide remains at rest during said finish of said recoil and a yielding cartridge feed-lever attached to the belt-slide.

3. In a machine gun, the combination of a sliding barrel having a transverse groove, a stationary feeding casing, a slide mounted in said transverse groove, a crank-shaft journaled in said casing, an arm carried by said crank shaft and connected with said

slide, a belt-slide movable in said casing and provided with a guide-slot having an effective portion extending parallel with the axis of the barrel and with a non-effective portion extending in a direction substantially parallel to an arc having the crank-shaft as a center, a second arm carried by said shaft and having a portion movable in the effective portion of said guide-slot immediately at the beginning of the recoil of said barrel to actuate said belt-slide and in the non-effection portion of said slot during the finish of said recoil whereby the belt-slide remains at rest during said finish of said recoil and a cartridge feed-lever carried by said belt-slide.

4. In a machine gun, the combination of a sliding barrel having a transverse groove, a stationary feeding casing, a slide mounted in said transverse groove, a crank-shaft journaled in said casing, an arm carried by said crank shaft and connected with said slide, a belt-slide movable in said casing and provided with a guide-slot having an effective portion extending parallel with the axis of the barrel and with a non-effective portion extending in a direction substantially parallel to an arc having the crank-shaft as a center, a second arm carried by said shaft and having a portion movable in the effective portion of said guide-slot immediately at the beginning of the recoil of said barrel to actuate said belt-slide and in the non-effective portion of said slot during the finish of said recoil whereby the belt-slide remains at rest during said finish of said recoil, a cartridge feed-lever carried by said belt-slide and means for locking the cartridge-belt against yielding during the outward movement of the belt-slide,

5. In a machine gun, the combination of a sliding barrel, a stationary feeding casing, a cartridge belt transversely movable through said casing, a belt-slide adapted to be moved transversely in said casing to intermittently feed said cartridge belt, a device connected with said barrel and actuated thereby and means for connecting said slide with said device whereby the recoil of the gun is transmitted to said slide and whereby the latter remains at rest during the finish of the said recoil and during the beginning of the forward movement of the barrel, spring operated bell-crank levers mounted on the feeding casing and lugs on said levers adapted to project into the space between two adjacent cartridges in the cartridge belt whereby the latter is locked against movement in one direction.

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