C. G. SWEBILIUS & H. T. R. HANITZ.

REPEATING FIREARM.

APPLICATION FILED FEB. 24, 1915.

1,146,536.

Patented July 13, 1915.

2 SHEETS—SHEET 1.

Fig 1

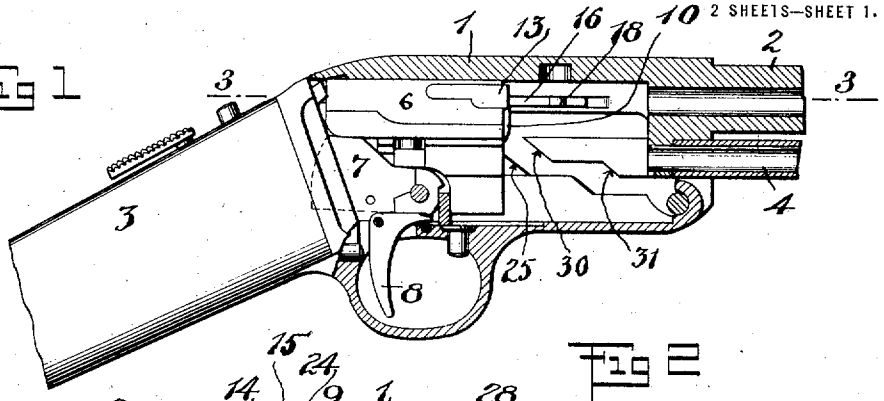


Fig 2

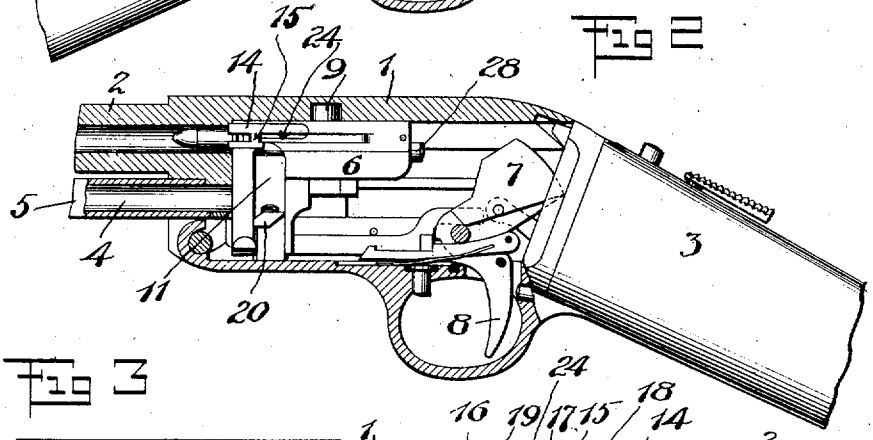


Fig 3

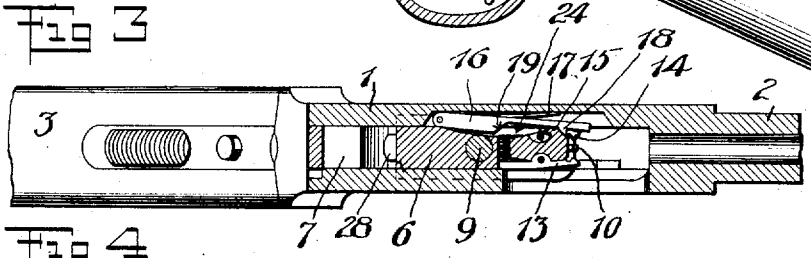


Fig 4

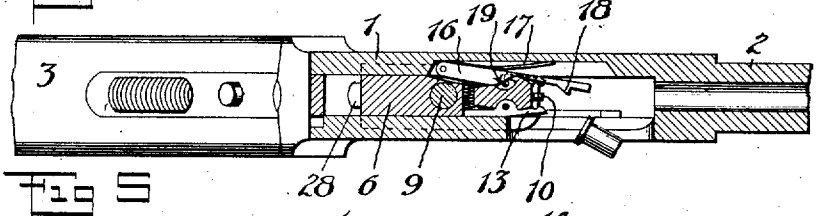
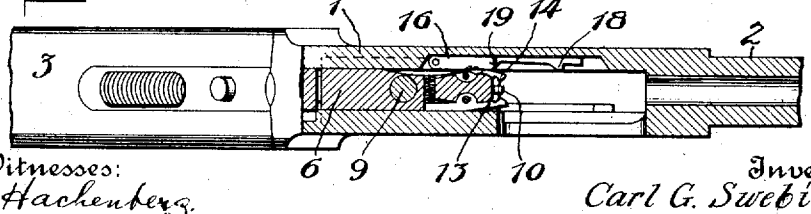


Fig 5



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2 SHEETS—SHEET 2.

Fig 6

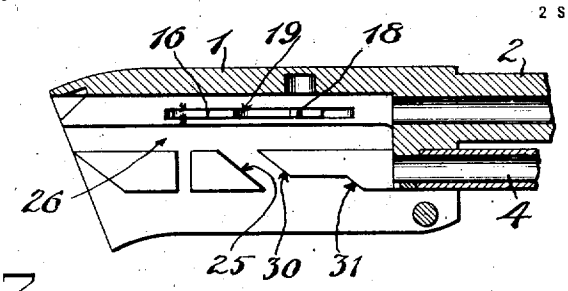


Fig 7

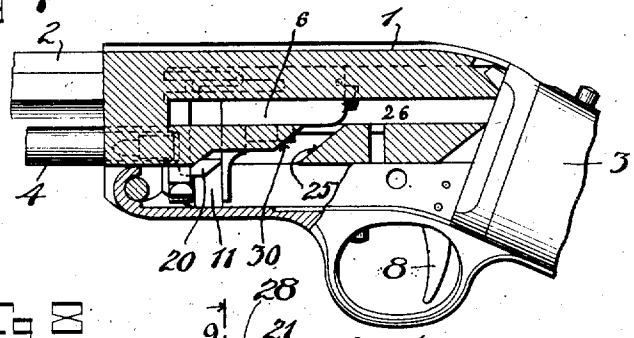


Fig 8

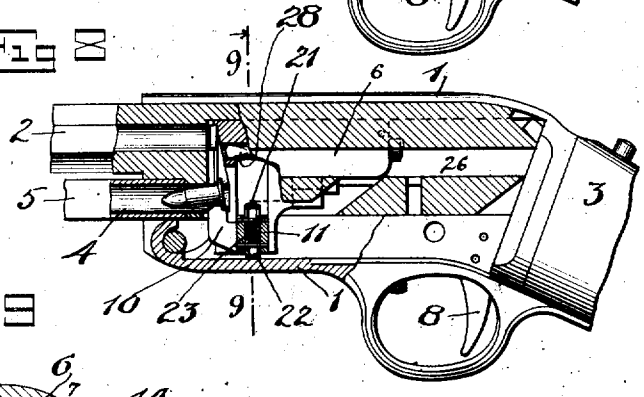


Fig 9

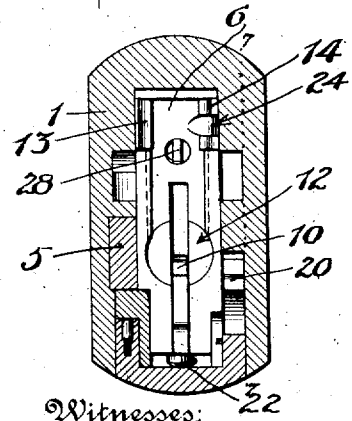


Fig 10

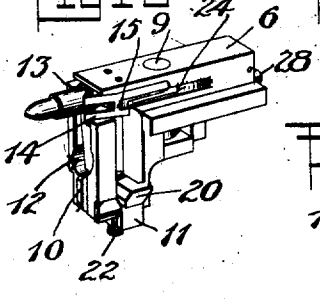


Fig 11

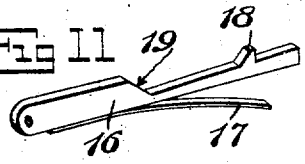
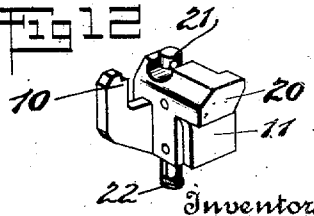


Fig 12



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R. [illegible]

UNITED STATES PATENT OFFICE.

CARL GUSTAF SWEBILIUS AND HANS T. R. HANITZ, OF NEW HAVEN, CONNECTICUT, ASSIGNORS TO THE MARLIN FIREARMS COMPANY, OF NEW HAVEN, CONNECTICUT, A CORPORATION OF CONNECTICUT.

REPEATING FIREARM.

1,146,536. Specification of Letters Patent. **Patented July 13, 1915.**

Application filed February 24, 1915. Serial No. 10,207.

To all whom it may concern:

Be it known that we, CARL G. SWEBILIUS and HANS T. R. HANITZ, a citizen of the United States and a subject of the German Empire, respectively, residing at New Haven, county of New Haven, State of Connecticut, have invented certain new and useful Improvements in Repeating Firearms, of which the following is a full, clear, and exact description.

Our invention relates to certain new and useful improvements in repeating firearms, particularly of that type set forth in our former Patent No. 1,110,837, of September 15, 1914.

The object of the present invention is to improve certain features of cartridge handling mechanism to guarantee the effective loading and ejecting of the cartridges and empty shells.

In the drawings,—Figure 1 is a side elevation of the breech portion of a firearm showing the receiver and barrel and certain associated parts in vertical longitudinal section. Fig. 2 is a similar view looking from the other side. Figs. 3, 4 and 5 are each horizontal sectional views showing certain parts in different positions. Fig. 6 is a central longitudinal section of the receiver, showing one of the features of construction in elevation. Fig. 7 is a section on substantially the plane of the line 7—7 showing the parts in one position. Fig. 8 is a similar view showing the parts in a slightly different position. Fig. 9 is a relatively enlarged cross-section on the line 9—9. Fig. 10 is a perspective view of the breech-block and the associated mechanism. Fig. 11 is a perspective view of the ejector relatively enlarged. Fig. 12 is a perspective view of the cartridge carrier.

For a detailed description of the various parts which are in common to those employed in the firearm disclosed herein and in our former patent above referred to, we would refer to said patent, it being our intention to refer only briefly herein to such parts, devoting a more detailed description to those features which constitute the present invention.

1 represents the receiver; 2 the barrel; 3 the stock; 4 the magazine tube; 5 the action rod; 6 the reciprocating breech-block sliding in suitable guideways in the upper part of the receiver; 7 the hammer arranged to be mechanically cocked by the reciprocation of the breech mechanism; 8 the trigger; 9 the locking bolt, in this instance carried by the breech-block and functioning to lock the breech-block in its extreme forward position when the gun is ready to be fired.

The cartridge carrier comprises the forwardly projecting portion 10 or carrier proper, and the main body or block 11 which slides up and down in a guideway in the breech-block. The forward part of the breech-block is slitted vertically so that the part 10 will project forwardly therethrough. The middle part of this slit is provided with a rounded clearance recess 12 which stands in line with the rear end of the magazine so as to receive the head of a cartridge as it is released therefrom. The upper part of this slot is somewhat narrower than this recess and is undercut to afford clearance for the cartridge rim and to act as a guideway for the cartridge as it is being carried up.

13, 14 are the extractor hooks, one of which is provided at its back with a longitudinal groove 24 so formed as to provide a cam 15, as shown in Fig. 10.

The ejector comprises the main body 16 arranged to be pivoted at its rear end in a groove in the wall of the receiver, the other end of the ejector being movable in and out. A suitable spring, for example 17, is provided to normally project the free end of the ejector. The ejector is provided with a nose 18 near its forward end, said nose having a square front face and an inclined rear face.

19 is an inclined shoulder to the rear of the nose 18, said incline being arranged oppositely to the inclined side of the nose 18, see Fig. 11.

The groove in the extractor 14, and the cam 15, are in the same plane as the ejector.

The carrier is provided with an offset portion 20 which is arranged to move in a groove in the side wall of the receiver, in the same manner as described in our aforesaid patent, said groove being so shaped as to move the carrier up and down at the proper time.

21 is a spring pressed plunger mounted in the upper end of the carrier body 11, while 22 is a spring pressed nose mounted in the under side of the carrier body 11.

These two plungers 21, 22 are preferably independent but may be in line so that they may be operated by the same spring 23.

Any suitable cartridge cut-off (not shown) may be provided to release the cartridges one by one from the magazine, for example, such a cut-off may be used as illustrated in our former patent above referred to.

The operation of handling the cartridges is as follows: When the breech is locked up and the gun ready for firing, as shown in Fig. 2, the breech-block will stand in its extreme forward position and will receive in the recess 12 the head of the rearmost cartridge in the magazine, which has then been released so that it will stand in approximately the position shown in dotted lines in Fig. 7. At this time the carrier 10 is in its fully depressed position, wherein the spring-stud 22 will rest against the bottom of the receiver, said spring-stud being pressed in slightly so as to be under tension. At this same time also the ejector will be repressed into its groove in the side wall of the receiver, inasmuch as the solid side wall of the breech-block to the rear of the groove 24 will bear upon the extractor shoulder back of the incline 19, thus holding it fully depressed. A slight rearward movement of the breech-block, say from the position shown in Fig. 7 to that shown in Fig. 8, will permit the cartridge carrier 10 to rise slightly under the influence of the spring-stud 22 thus forcing the rear end of the cartridge upwardly slightly whereby its rim will engage in the undercut in that part of the cartridge guideway just above the recess 12 so that any further rearward movement of the breech-block will with certainty carry back the said cartridge which will then be under the control of the carrier. As the breech-block continues rearwardly the carrier will ride along for a slight distance without being further elevated so as to permit the nose of the cartridge to be entirely withdrawn from the magazine. Then the carrier extension 20 will strike against the incline 25 up which it will ride so as to move the carrier 10 upwardly and force the cartridge into the position wherein it is gripped by the extractor hooks 13, 14. (See Fig. 10.) The further rearward movement of the breech-block causes the carrier extension 20 to move horizontally in the groove 26. While in this position the spring-stud 21 is under compression, since it will strike against the under side of the firing-pin 28. When the breech-block is again advanced to a point where the lateral extension 20 coincides with the groove in front of the incline 25, the pressure of the spring-stud 21 will assist the carrier in moving downwardly into said groove wherein the extension 20 will engage the incline 30, which will cause the carrier to positively descend. When the carrier has descended to nearly its lowest position it is allowed to move forwardly in a horizontal plane for a short distance until the offset 20 engages the short incline 31, which imparts to the carrier its final slight downward movement wherein the spring-stud 22 is put under compression, as aforesaid, and wherein the nose 10 will be sufficiently depressed to permit a fresh cartridge from the magazine to be moved rearwardly into the clearance recess 12. This description is complete as to one cycle of operation of the carrier.

Now as to the ejector: Simultaneously with the operation of the carrier as aforesaid, the ejector is mechanically operated as follows starting with the parts as shown in Figs. 2 and 7, namely with the parts in the locked-up position, a rearward movement of the action rod 5 first unlocks the breech-block and then moves it rearwardly. As the breech-block moves rearwardly any cartridge or empty shell in the chamber of the barrel, then held by the extractor hooks 13 and 14, will be withdrawn from said chamber. As the breech-block continues its rearward movement the solid part of the breech-block moves back to the rear end of the ejector 16 and consequently permits the spring 17 to project the ejector so that the nose 18 will ride along in the groove 24 which leads to the cam 15. As soon as the breech-block on its rearward excursion reaches a position where the cam 15 retires behind the nose 18 it allows the said ejector nose 18 to snap in behind the rim of the cartridge with a relatively oblique movement which serves to dislodge the cartridge and impart to it a sharp blow in an oblique direction dislodging the shell and impelling it outwardly through the side opening in the receiver. (See Fig. 4.) The continued rearward movement of the breech-block causes the cam 15 to engage the incline 19 of the ejector so as to repress the latter into its groove in the side wall of the receiver thus pressing it back out of the way of the fresh cartridge which is then being carried up to the position where it is to be engaged by the extractor-hooks. This holding back of the ejector during this period of operation is important because it removes any danger of dislodging the cartridge so that it may not be properly engaged by the extractor hooks. It will be understood, of course, that forward of the cam 15 there is a slot in the extractor 14 which permits the ejector nose 18 to snap in behind the rim of the cartridge shell preparatory to disengaging the same from the extractor hooks and ejecting it through the side opening.

What we claim is:

1. In a repeating firearm, a receiver, a breech-block movable to and fro, an ejector

mounted in a groove in the side wall of the receiver adjacent to the breech-block, a spring arranged to project the forward end of the ejector laterally to disengage a shell carried by the breech-block and project it laterally, means for momentarily increasing and then releasing the tension of the ejector spring just prior to and during the act of disengaging said shell.

2. In a repeating firearm, a receiver, a breech-block movable to and fro, an ejector mounted in a groove in the side wall of the receiver adjacent to the breech-block, a spring arranged to project the forward end of the ejector laterally to disengage a shell carried by the breech-block and project it laterally, means for momentarily increasing and then releasing the tension of the ejector spring just prior to and during the act of disengaging said shell, said means being carried by the breech-block.

3. In a repeating firearm, a receiver, a breech-block movable to and fro, an ejector mounted in a groove in the side wall of the receiver adjacent to the breech block, a spring arranged to project the forward end of the ejector laterally to disengage a shell carried by the breech-block and project it laterally, means for momentarily increasing and then releasing the tension of the ejector spring just prior to and during the act of disengaging said shell, said means being carried by the breech-block and comprising a cam at the side of said breech-block and adjacent to the front end thereof.

4. In a repeating firearm, a receiver, a breech-block movable to and fro, an ejector mounted in a groove in the side wall of the receiver adjacent to the breech-block, a spring arranged to project the forward end of the ejector laterally to disengage a shell carried by the breech-block and project it laterally, means for momentarily increasing and then releasing the tension of the ejector spring just prior to and during the act of disengaging said shell, said means being carried by the breech-block and comprising a cam at the side of said breech-block and adjacent to the front end thereof, an incline and shoulder on said ejector intermediate its length arranged to be engaged by the breech-block when the latter is retracted to press said ejector back into its groove.

5. In a repeating firearm, a receiver, a breech-block arranged to be moved to and fro therein, an ejector mounted in a groove in the side wall of the receiver at one side of the breech-block, a laterally projecting ejector nose near the forward end of the ejector, a shoulder having an inclined approach intermediate the length of the ejector, extractor hooks carried by the forward end of the breech-block, a groove in the extractor carried by that side of the breech-block overstanding the ejector, and a cam at one end of the groove arranged to coöperate with said ejector nose and said shoulder for the purposes described.

6. In a repeating firearm, a receiver, a reciprocating breech-block, ejector mechanism comprising an ejector pivotally mounted in a groove in the inner wall of the receiver at the side of the breech-block, the forward end of said ejector being arranged to spring outwardly, an ejector nose near the front end of the ejector, the body of said ejector being recessed to the rear of said nose, and a shoulder at the rear of said recess, means on the side of the breech-block arranged to repress said ejector by engaging said nose and shoulder alternately on the backward movement alone of said breech block.

7. In a repeating firearm, a receiver, a reciprocating breech-block, a carrier arranged to move up and down relatively to said breech-block, a cam groove in the side wall of the receiver, an extension on the carrier arranged to move in said cam groove, said cam groove having two spaced inclines pitched in substantially the same angle but in different planes, a spring device arranged between the carrier and the lower part of the receiver and arranged to be put under compression when the said extension engages the foremost of said corresponding inclines, said means operating to partially lift said carrier on the first partial retraction of the breech-block.

8. In a repeating firearm, a receiver, a reciprocating breech-block, a carrier, a cam groove in the side wall of the receiver, an extension on the carrier arranged to move in said groove and be moved by the walls of said groove, a yielding device arranged between the carrier and an adjacent part of the receiver, said device being put under compression when the breech-block stands in its foremost position, said means assisting the upward movement of the carrier on the retraction of said breech-block.

9. In a repeating firearm, a receiver, a reciprocating breech-block, a carrier, a cam groove in the side wall of the receiver, an extension on the carrier arranged to move in said groove and be moved by the walls of said groove, a yielding device arranged between the carrier and an adjacent part of the receiver, said device being put under compression when the breech-block stands in its foremost position, said means assisting the upward movement of the carrier on the retraction of said breech-block, said yielding device being carried by the carrier.

10. In a repeating firearm, a receiver, a reciprocating breech-block, a carrier, a cam groove in the side wall of the receiver, an extension on the carrier arranged to move in said groove and be moved by the walls of said groove, a yielding device arranged between the carrier and an adjacent part of

the receiver, said device being put under compression when the breech-block stands in its foremost position, said means assisting the upward movement of the carrier on the retraction of said breech-block, said yielding device being carried by the carrier and comprising a yielding spring pressed plunger.

11. In a repeating firearm, a receiver, a reciprocating breech-block, a carrier, a cam groove in the side wall of the receiver, an extension on the carrier arranged to move in said groove and be moved by the walls of said groove, a yielding device arranged between the carrier and the lower part of the receiver, said device being put under compression when the breech-block stands in its foremost position, said means assisting the upward movement of the carrier on the retraction of said breech-block, said yielding device being carried by the carrier and comprising a yielding spring pressed plunger, and yielding means carried by the upper part of the carrier arranged to assist said carrier in its downward movement.

12. In a repeating firearm, a receiver, a reciprocating breech-block, a carrier, a cam groove in the side wall of the receiver, an extension on the carrier arranged to move in said groove and to be moved by the walls of said groove to elevate and depress the carrier, yielding means carried by the carrier and operating to assist in the upward and downward movement thereof.

13. In a repeating firearm, a receiver, a reciprocating breech-block, a carrier, a cam groove in the side wall of the receiver, an extension on the carrier arranged to move in said groove and to be moved by the walls of said groove to elevate and depress the carrier, yielding means carried by the carrier and operating to assist in the upward and downward movement thereof, said yielding means comprising two spring pressed detents.

14. In a repeating firearm, a receiver, a reciprocating breech-block, a carrier, a cam groove in the side wall of the receiver, an extension on the carrier arranged to move in said groove and to be moved by the walls of said groove to elevate and depress the carrier, yielding means carried by the carrier and operating to assist in the upward and downward movement thereof, said yielding means comprising two spring pressed detents arranged substantially in line, and a spring in common to said detents.

15. In a repeating firearm, a receiver having a side opening for the discharge of empty shells, a reciprocating breech block, cartridge gripping means at the front of said breech block, means for feeding cartridges successively to said gripping means, a movable ejector mounted in the side wall of the receiver opposite the said side opening, means to project said ejector on the backward movement of the breech block to eject an empty shell, and means carried by the breech block to repress said ejector on the further backward movement of the breech block to hold said ejector out of the path of the shell being fed to the breech block gripping means.

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