H. STAMM.

SELF LOADING FIREARM.

APPLICATION FILED APR. 14, 1914.

1,132,044.

Patented Mar. 16, 1915.

5 SHEETS—SHEET 1.

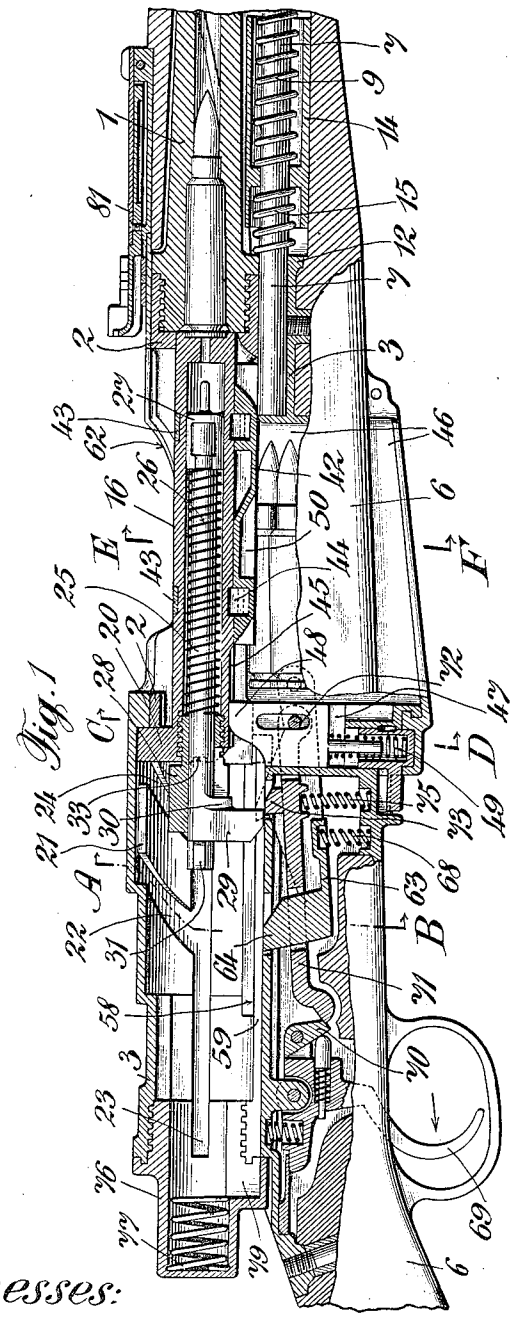


Fig. 1

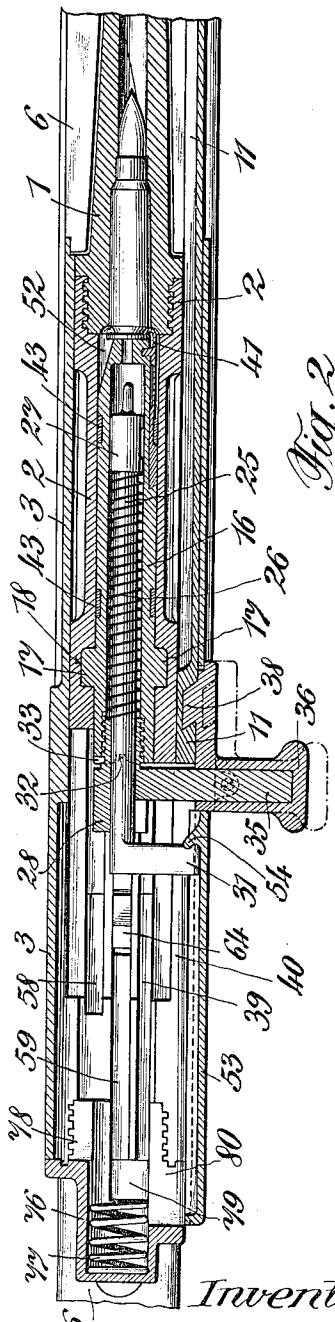


Fig. 2

Witnesses:

B. Bommers

E. Reckert.

Inventor

Hans Stamm,

By Heyn & Mathis

Atty.

H. STAMM.

SELF LOADING FIREARM.

APPLICATION FILED APR. 14, 1914.

1,132,044.

Patented Mar. 16, 1915.

5 SHEETS—SHEET 2.

Fig. 3

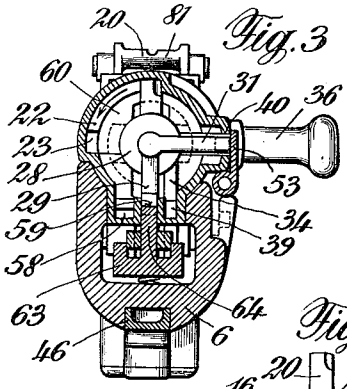


Fig. 4

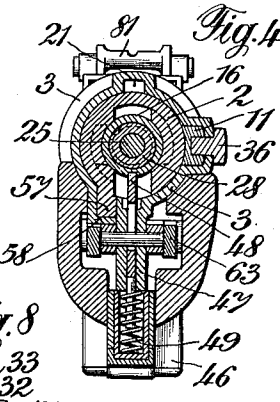


Fig. 5

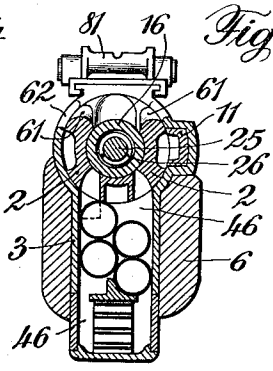


Fig. 8

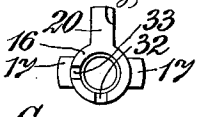


Fig. 6

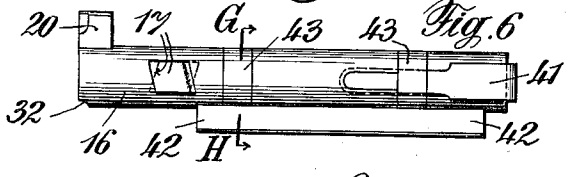


Fig. 9

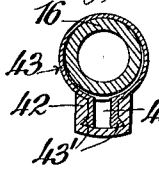


Fig. 10

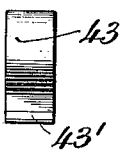


Fig. 7

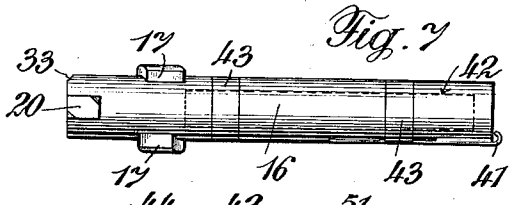


Fig. 14

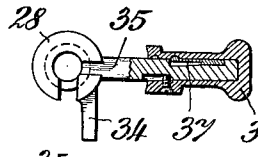


Fig. 11



Fig. 15

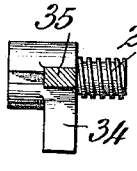


Fig. 12

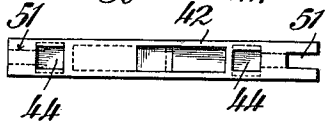


Fig. 16

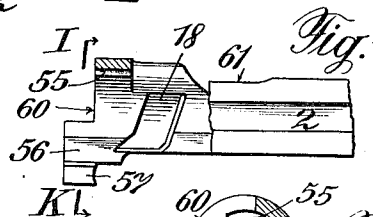


Fig. 13

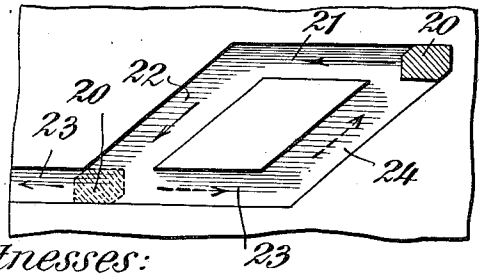
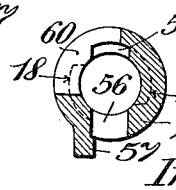


Fig. 17



Witnesses:

B. W. Sommers

E. Leckert

Inventor:

Hans Stamm,

By Munn & Co

Atty.

H. STAMM.

SELF LOADING FIREARM.

APPLICATION FILED APR. 14, 1914.

1,132,044.

Patented Mar. 16, 1915.

5 SHEETS—SHEET 3.

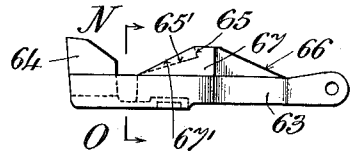


Fig. 22

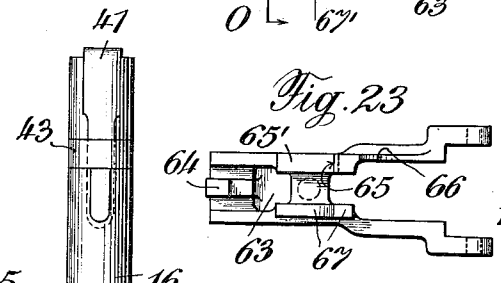


Fig. 23

Fig. 25

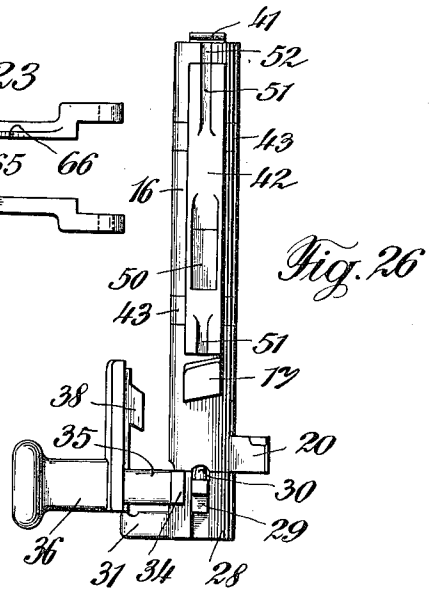


Fig. 26

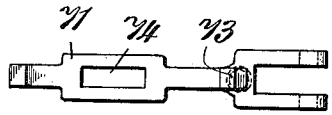


Fig. 21

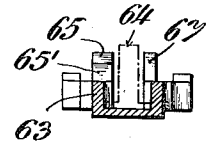


Fig. 24

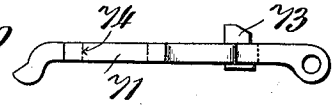


Fig. 20

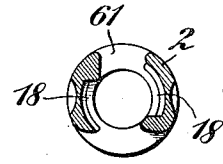


Fig. 19

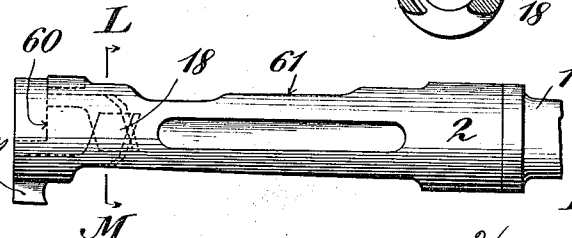


Fig. 18

Witnesses:

P. Sommers

E. Leckert

Inventor:

Hans Stamm,

By Henry Orth & Co

Atty.

H. STAMM.

SELF LOADING FIREARM.

APPLICATION FILED APR. 14, 1914.

1,132,044.

Patented Mar. 16, 1915.

5 SHEETS—SHEET 4.

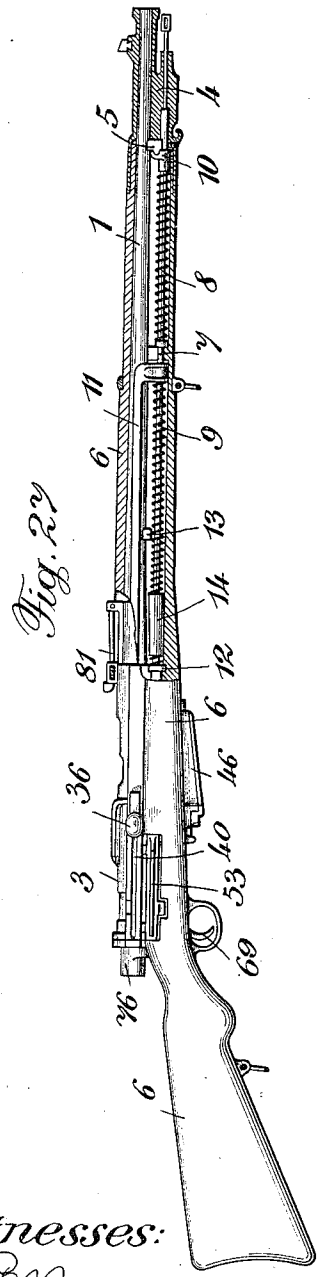


Fig. 27

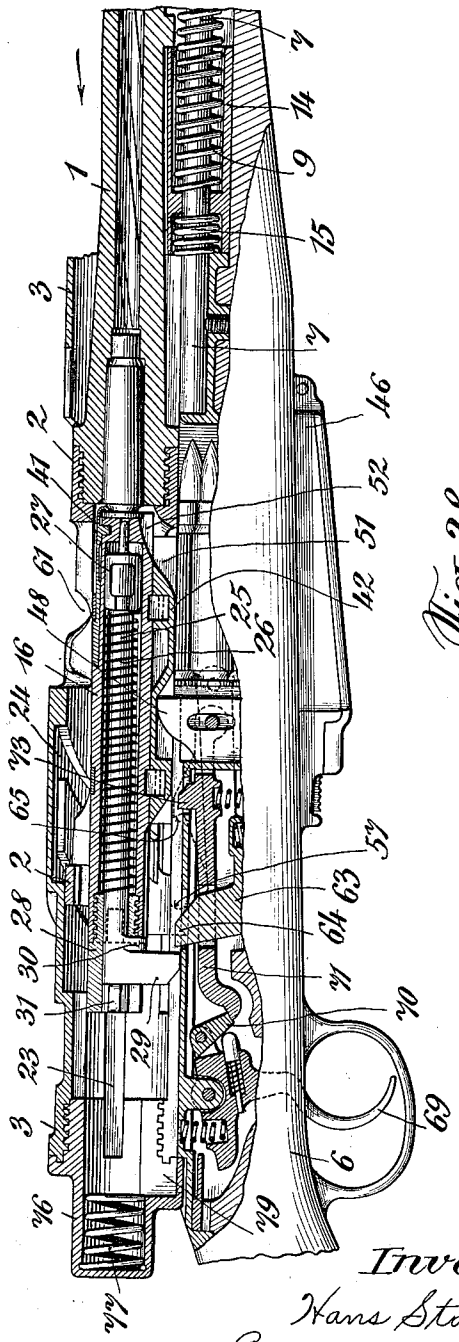


Fig. 28

Witnesses:

B. Dommers

E. Leckert

Inventor:

Hans Stamm,

By Henry Orth & Co

Atty.

H. STAMM.

SELF LOADING FIREARM.

APPLICATION FILED APR. 14, 1914.

1,132,044.

Patented Mar. 16, 1915.

5 SHEETS—SHEET 5.

Fig. 29

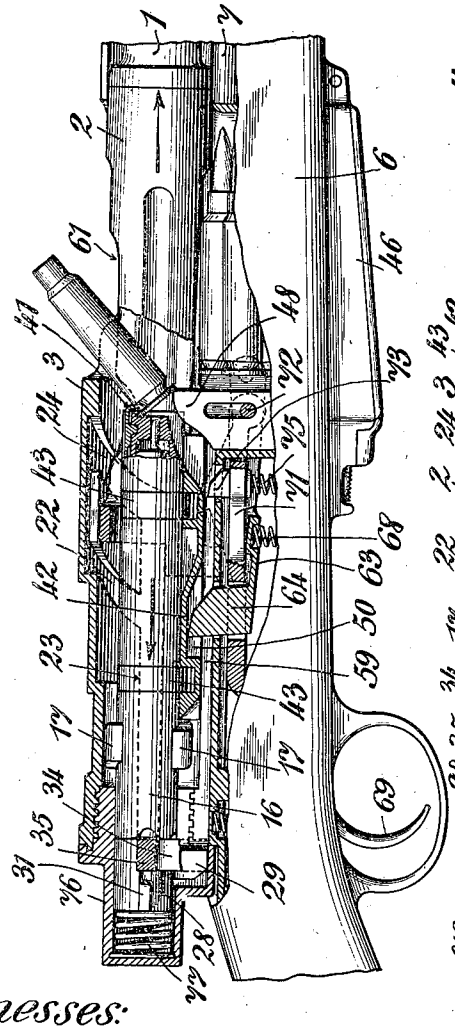
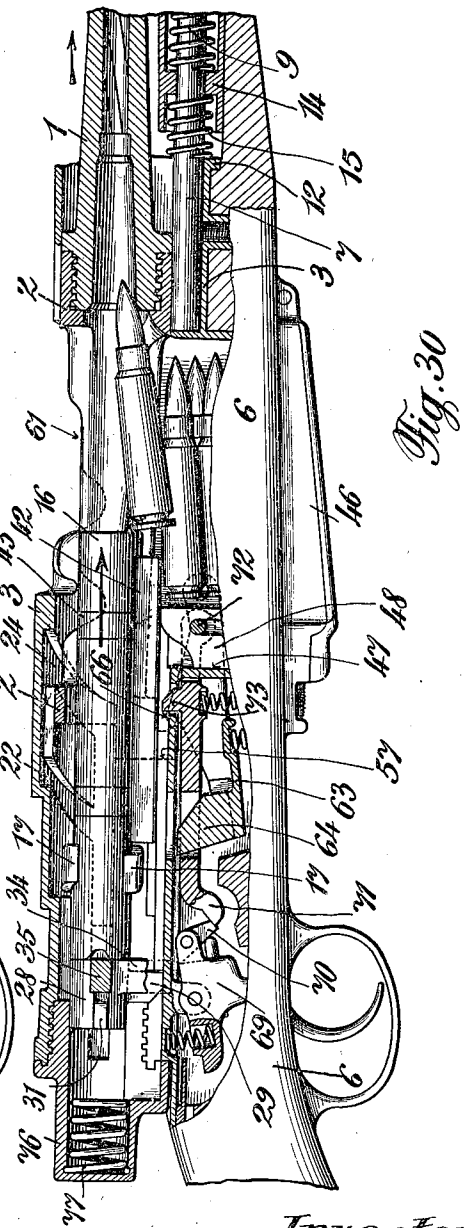


Fig. 30



Witnesses:

B. Dommers

E. Leckert

Inventor:

Hans Stamm,

By Lewis & Hyde

Atty.

UNITED STATES PATENT OFFICE.

HANS STAMM, OF ST. GALLEN, SWITZERLAND.

SELF-LOADING FIREARM.

1,132,044. Specification of Letters Patent. Patented Mar. 16, 1915.

Application filed April 14, 1914. Serial No. 831,776.

To all whom it may concern:

Be it known that I, HANS STAMM, a citizen of the Republic of Switzerland, residing at Gallusstrasse, St. Gallen, Switzerland, have invented new and useful Improvements in Self-Loading Firearms; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawing, and to letters or figures of reference marked thereon, which form a part of this specification.

This invention relates to self loading firearms and has particular relation to the type having a sliding barrel and with springs for returning the barrel and breech action into their forward position, the breech action being locked and unlocked, when the barrel recoils and moves forward, by means of a rotary lug in the breech action, which lug projects into a curved guide groove of a stationary breech case. In self loading guns of this kind hitherto known the unlocking of the breech action takes place directly at the beginning of the barrel recoil, and loosening of the cartridge case prior to drawing out does therefore not take place in this case. This method of unlocking is only suitable for small weapons or for ammunition with a weak powder charge, but not for military guns or for the pointed projectiles with increased powder charge, because in weapons of this class the rotating or turning of the breech locking piece which immediately begins during the time of maximum gas pressure would entail serious consequences, and because by these known constructions of breech actions and unlocking methods, it is quite impossible to draw out the empty cartridge case, still held stationary under the gas pressure, from the barrel without previously loosening it. This drawback is intended to be remedied by the present invention, inasmuch as the breech action consists of a breech-bolt, a breech-frame, said breech bolt being capable of being locked to the rear of the breech frame, a fixed outer breech case acting as a guide for the barrel and the breech frame, separate springs stressed by the recoil for moving the barrel and the breech action, means on the fixed breech-case for limiting the recoil of the barrel, the recoil stroke of the barrel being less than the whole movement of the breech action, a guide groove on the inside of the fixed breech case, a lug on said breech bolt projecting into the guide groove, said groove being so formed and with respect to the breech bolt so arranged that a reciprocatory rotation of the latter is effected during the to-and-fro motion of the barrel and the breech action, whereby an unlocking and relocking of the breech bolt is compulsorily effected by the guide groove and in such a manner, that the unlocking of the breech bolt is effected shortly before the end of the recoil of the barrel, *i. e.* when the shot has left the barrel, the cartridge case being at the same time loosened from the barrel.

In the accompanying drawings:—Figure 1 is a vertical longitudinal section of a part of a self-loading military rifle constructed according to this invention of which some parts are shown in elevation. Fig. 2 is a horizontal section through the axis of the breech action of Fig. 1. Figs. 3, 4 and 5 are cross-sections respectively on the lines A—B; C—D; E—F of Fig. 1. Figs. 6 and 7 illustrate the breech bolt with a cartridge depressor in elevation and in plan. Fig. 8 is an end view of the breech bolt. Fig. 9 is a section on the line G—H of Fig. 6 on an enlarged scale. Fig 10 is an elevation on the same scale as in Fig. 9 of a ring for holding the cartridge depressor. Figs. 11 and 12 are respectively a vertical longitudinal section and a plan of the cartridge depressor. Fig. 13 shows a development of the guiding groove for the breech bolt lug. Figs. 14 and 15 show a nut of the breech bolt in end and side elevation as well as in section, Fig. 14 showing the nut furnished with a handle for the breech action. Fig. 16 shows the rear part of the breech frame partly in section and partly in elevation. Fig. 17 is a section on the line I—K of Fig. 16. Fig. 18 is an elevation of the breech frame. Fig. 19 shows a section of the breech frame on line L—M of Fig. 18. Figs. 20 and 21 show a sear of the trigger mechanism in elevation and plan. Figs. 22 to 24 show the obstructing lever for the breech frame and the breech bolt in elevation, plan and in section on the line N—O of Fig. 22. Figs. 25 and 26 show the breech bolt with the cartridge de-

pressor, the striking pin and handle in plan and underside view. Fig. 27 shows the complete firearm on a reduced scale with the front part in section. Figs. 28 to 30 show the barrel with the breech action in different positions, partly in vertical section and partly in elevation.

The automatic loading military rifle herein described and shown by way of example, may be constructed as an entirely automatic rifle (that is with automatic unlocking and relocking) or as a semi-automatic single loading rifle (that is with unlocking and relocking effected by hand).

The rifle consists of a barrel 1, movable along its longitudinal axis, screwed to a cylindrical breech frame 2 and guided in a stationary outer breech case 3. Besides being guided in the breech case 3 the barrel 1 is guided with its forward end in the front ring or band 4 and by means of the lug 5 on the barrel, which lug slides on a tube 7 mounted in the stock 6 below the barrel and fastened at one end in the outer breech case 3 and at the other end to the band 4. (Figs. 1 and 27). Two helical springs 8 and 9 are mounted upon the tube 7 behind each other and are compressed or stressed by the recoil of the barrel. The front spring 8 serves for returning the barrel, and the rear spring 9 for returning the breech action after a shot has been fired. The spring 8 is tensioned by the barrel by means of the lug 5 acting upon a sleeve 10 which is slidable on the tube 7 and bears against said spring 8 (Fig. 27) while the spring 9 is tensioned by means of a rod 11 embracing the tube 7 and bearing against said spring; said rod is guided in the outer breech case 3 and coupled to the breech action (Fig. 2). For the limitation of the recoil of the barrel a stop or lug 12 is provided on the outer breech case 3, which stop is situated approximately in the center of gravity of the firearm. Further, the barrel is provided with a second rear lug 13 for the purpose of striking a buffer sleeve 14 which is mounted on the tube 7 and arranged between the spring 9 and a buffer spring 15 which is mounted between the sleeve 14 and the lug or stop 12, also on the tube 7 (Figs. 1 and 28).

The breech action mounted and axially movable in the breech frame 2 is a straight pull breech action but comprises, as compared with the already mentioned automatic firearms, a rotatable breech bolt 16, without bolt actuating sleeve. This breech bolt 16 is furnished near its rear end with two locking nibs 17 which are arranged diametrically opposite each other (Figs. 6 to 8) and which may be brought into the bolting niches 18 in the rear end of the breech frame 2 (Figs. 18 and 19), whereby said nibs 17 are brought into a horizontal plane (Fig. 2).

A lug 20 is provided on the rear end of the breech bolt 16 (Figs. 6 to 8), which, in the locked position of the breech bolt, takes up a vertical position in the weapon and extends into a guiding groove provided in the interior of the outer breech case 3 (Figs. 1 and 3). Said groove has the rhombic shape shown in Fig. 13 and is furnished with two groove parts 21 and 23 which are arranged parallel to the middle axis of the outer breech case 3 and in the same direction to each other, the part 21 being arranged above the part 23 on the left side of the outer breech case 3 (Figs. 3 and 4). Further, the guiding groove consists of two groove portions 22 and 24 which are arranged at certain angles in a slanting direction to the central axis of the outer breech case 3 and which pass over into the parts 21 and 23 and are also arranged at the left side of the outer breech case 3. The purpose of this groove 21 to 24 is to impart to the breech bolt the necessary rotation of about 45° in the one and the other direction in order to effect the unlocking and relocking of the breech bolt at the right moment. The groove portion 23 extends to the rear end of the frame and serves to guide the lug of the returning unlocked breech bolt (Figs. 1 and 2).

The striking pin 25 and the striking spring 26 are mounted in the breech bolt 16. The spring 26 is mounted between a nut 28 and the coupling part 27 carrying the striking or hammer point and arranged upon the striker 25. The nut 28 is screwed into the rear part of the breech bolt, but is not rotatable with relation to the latter (Figs. 1 and 2.) The striker 25 is furnished at its rear end with a lug 29 extending downward, with a securing nose 30 arranged in front of said lug, and with a lateral securing arm 31 arranged behind the lug 29 (Figs. 1 to 3 and 26).

The striking pin 25 is guided in the nut 28 of the breech bolt which is furnished with two slots corresponding to the parts 29 and 31 (Fig. 14). For the nose 30 of the striker 25 two slots are provided at an angle of 45° to each other on the rear end of the breech bolt, of which one slot 32 is deeper than the other slot 33; the latter serves as a securing slot for the striker (Figs. 1, 2 and 6 to 8). The nut 28 is further provided with a lug 34 extending downward and with a lateral arm 35 which is arranged at right angles to the axis of the breech bolt, said arm being furnished with a handle 36 which is movable upon the arm 35 to a limited extent and can be fixed in its end positions by means of a spring catch 37 (Fig. 14). The handle 36 is furnished with a coupling lug 38 (Figs. 25 and 26), by means of which lug said handle may be coupled to the rod 11, already mentioned, by setting the lug 38 of

the handle in a corresponding recess in the rod 11 (Fig. 2).

The nut 28 is guided, by means of the lug 34, in a groove 39 provided at the lower part of the outer breech case 3 and means of the arm 35 in a lateral slot 40 of said outer breech case 3 (Figs. 2 and 3). Therefore, the nut 28 cannot rotate relatively to the breech bolt 16, while the latter can rotate freely during its to-and-fro movements to the extent which is necessary for the unlocking and relocking. The front part of the breech bolt 16 is provided with the cartridge case extractor 41 (Figs. 2, 6 and 7) and below the breech bolt is arranged the cartridge depressor 42, which is loosely connected to the breech bolt by means of two split spring rings 43, (Figs. 9 and 10) carried by the breech bolt in such a manner that the breech bolt can rotate in relation to the cartridge depressor 42 and the rings 43. The rings 43 have, as shown in Fig. 9, tongues 43^1 provided with enlargements which engage in corresponding recesses 44 in the cartridge depressor 42 and hold the latter owing to the stressing of the tongues 43^1. By compressing the rings, the tongues 43^1 may be moved nearer to each other, whereupon the depressor 42 may be disengaged from said tongues.

Owing to the sloping surfaces provided on the enlargements of the tongues 43^1 and in the recesses 44, the cartridge depressor can be moved from the rings 43 or fastened to the latter without the use of a tool.

As already mentioned, the locking nibs 17 and the niches 18 are provided with an extraordinary great transverse pitch or twist in order to effect a good loosening of the discharged cartridge case in the barrel. In order to prevent a premature or an unintentional rotation or unlocking of the breech bolt while the shot is being fired, a longitudinal groove 45 is provided on the breech bolt 16 behind the cartridge depressor 42, and a cartridge ejector 48, arranged behind the cartridge magazine 46 and vertically guided below the breech bolt 16 in a guide 47, has its upper edge pressed into the groove 45 by means of the ejector spring 49 (Fig. 1). Such an unlocking might be effected by the pressure of the powder gases on the locking nibs 17 owing to the great transverse pitch of the latter.

The cartridge depressor 42 is provided below with a recess 50 and at both ends with guide slots 51 for the ejector 48 (Figs. 11 and 12). Further, the breech bolt 16 is provided at its front end with a longitudinal groove 52 for the ejector (Fig. 2). This groove 52 connects with the forward groove 51 of the cartridge depressor 42, when the breech bolt is in its unlocked position (Figs. 26 and 28), in order to make possible an ejection of the discharged cartridge case. A folding flap 53 is mounted on the right side of the outer breech case 3. This flap in its upright position closes the slot 40 in the outer breech case 3 and has an inner nose 54, which coöperates with the arm 31 of the striker 25, in order to secure the latter in its cocked position (Fig. 2). This flap 53 may be folded down into a recess in the stock 6 of the rifle, when the marksman shoots, whereby the slot 40 is freed for the movement of the breech bolt (dotted position of Fig. 3).

The breech case or frame 2 is provided with a groove 55 at the upper part of its rear end and below with a slot 56 for the passage of the two locking nibs of the breech bolt 16 for unlocking and relocking the latter, whereby said groove and slot are connected to the two bolting niches 18 (Figs. 16 to 19). Further, the breech case 2 is provided at its rear end with a downwardly extending side lug 57 (Figs. 16 and 17), which is guided in a lower groove 58 in the outer breech case 3. In the same manner a guide groove 59 is provided below in the interior of the outer breech case 3 and between the two grooves 39 and 58 for guiding the lug of the striker (Figs. 1 to 3). Further, the rear end of the breech case is provided with a recess 60 for the lug 20 of the breech bolt 16, in order to allow a rotation of the lug and of the breech bolt (Figs. 3 and 16, 17).

61 and 62 denote recesses in the casings 2 and 3 respectively. These recesses 61 and 62 are on the same level, when the breech action is in its locked position, and form the loading aperture for pushing the cartridges into the magazine 46 (Figs. 1 and 5). A locking device for the breech case and the breech bolt or breech action as well as the trigger mechanism for the striker is provided below the outer breech case 3. This locking device consists of a forked obstructing lever 63 (Figs. 22 and 24) which is pivoted on the magazine 46 by means of its forked arm and is provided with an obstructing nose 64, which coöperates with the recess 50 of the cartridge depressor 32. Further, this bolting or locking device is provided with an obstructing nose 65 for the lug 57 of the breech case, which nose 65 is arranged laterally to the nose 64, while before and behind said nose 65 there are provided ramps or sloping surfaces 65^1 and 66 as well as a projection 67 with slanting surface 67^1 for the lug 34 of the nut 28. The obstructing lever 63 is under the action of a spring 68 (Fig. 1), which spring tends to move the lever upward. Apertures are provided in the grooves 59, 58 and 39 for the parts 64, 65 and 67 in order that the latter may project into the path of the re-

cess 50 and into the paths of the lugs 34 and 57 (Figs. 1, 2, 14, 15, 16 and 17).

The trigger mechanism comprises a trigger lever 69, which is under the action of a spring, and is pivoted on the outer breech case 3. To the lever 39 is pivotally connected the trigger tongue 70, which is under the action of a spring. The trigger tongue 70 coöperates with the sear 71 (Figs. 21 and 22), which is pivoted at 72 (Fig. 1) on the guide 47. The sear 71 carries the lug 73 (Fig. 1), which projects through an aperture in the outer breech case 3 into the groove 59 or into the path of the lug 29 of the striker and said sear embraces the obstructing nose 64 of the obstructing lever 63 by means of an aperture 74 (Fig. 21). The sear 71 is likewise under the action of a spring 75, which tends to press the sear upward.

A closing cap 76 is screwed into the rear end of the outer breech case 3, so that the whole breech action may be taken out from the outer breech case 3 after said cap is screwed out. The cap 76 contains a buffer spring 77 for the breech action and has recesses 78, 79, 80 for receiving the lugs 20, 29 and the arm 35 (Figs. 1 and 2).

81 is the sight.

The manner of handling and the operation of the hereinbefore described self-loading military rifle is as follows:—The loading of the rifle is effected by moving the movable handle outward during the opening of the breech action (Fig. 2 point and dash lines), whereby said handle is uncoupled from the closing spring, so that the breech action remains open as in the case of an ordinary rifle. After introducing the cartridges through the loading aperture 61, 62 into the magazine 46, the breech action is moved straight forward and is closed by hand. If the shooting is to be entirely automatic, then the handle 36 is moved again inward, whereby it is coupled to the rod 11. If the shooting is to be semi-automatic, the handle is pressed outward again, whereby the breech action remains open after each shot, because it is uncoupled from the closing spring 9, and need only be closed by hand, for instance in magazine firing or when each cartridge is to be loaded singly. Assuming that the shooting is to be effected automatically and that the handle 36 is coupled to the rod 11. The breech action is locked and the striker 25 is kept cocked by the sear lug 73. By actuating the trigger lever 69, the sear 71 and the lug 73 are pulled down (Fig. 1) and the striker pin 25 is released, which now shoots forward, so as to detonate the cartridge contained in the barrel. After the shot the barrel 1 and the breech frame 2, screwed to the latter, together with the bolted breech action return, whereby the barrel spring 8 and the closing spring 9 of the breech action are stressed. The rear barrel lug 13 strikes against the buffer sleeve 14 after a portion of the whole travel of the breech action is passed, whereby the buffer spring 15 is compressed by the buffer sleeve 14, whereupon the latter strikes against the fixed stop 12. During this recoil of the barrel, the breech bolt 16 is turned downward, *i. e.* unlocked, by means of the part 22 of the guiding groove in the outer breech case 3 acting upon the lug 20 of the breech bolt, and the discharged cartridge case 11 loosened and pulled back a short distance owing to the great transverse pitch of the locking nibs. The lug 57 of the breech frame or case 2 slides along the inclined surface 66 over the obstructing nose 65, without encountering any obstruction, and thereby presses down the obstructing lever, which immediately shoots up after the lug 57 has passed (Fig. 28).

Owing to the barrel striking against the buffer sleeve 14 and against the stop 12 of the outer breech case, 3, the breech bolt 16, with the lug 20 guided in the groove portion 23, is moved alone into its rear position, whereby the shock of impact is reduced or absorbed by the buffer spring 77 and the empty cartridge case is ejected by the ejector 48 (Fig. 29). As the unlocking of the breech action is effected before the barrel reaches the rear position, the latter after striking the stop 12 is shot forward, without encountering any obstruction by the action of the spring 8, setting free the aperture 61, 62, for throwing out the cartridge case, before the breech bolt has reached its rear position, which is necessary for throwing out the cartridge case. After a certain movement in the opposite direction, that is, in the forward direction, the breech bolt 16 is arrested by the obstructing nose 64 engaging the recess 50 of the cartridge depressor 42, while, as already mentioned, the barrel with the breech frame shoots forward to free the loading aperture. By the mounting of the lug 57 of the breech frame upon the inclined surface 65^1 of the obstruction nose 65, the obstructing lever 63 is turned down until the lug 57 is caught by the obstructing nose 65 of the obstructing lever. Owing to the depressing of the obstructing lever 63 the obstructing nose 64 is moved out of the recess 50, whereby the breech bolt is released again and is now also shot forward by the spring 9, so as to push in front of it a fresh cartridge into the barrel, whereupon its head strikes the rear end of the barrel (Fig. 1). At the same time the locking nibs 17 of the breech bolt pass through the groove 55 and through the slot 56 in the breech frame in front of the locking niches 18, while at the

same moment the obstructing lever is pressed farther down by means of the lug 34 of the nut 28, mounting the inclined surface 67^1 of the projection 67 of the obstructing lever, so that the obstructing nose 65, arresting the barrel and the breech frame is disengaged and the barrel now released, the breech frame and the breech bolt being then moved together completely into their forward position. Hereby, the breech bolt is rotated with its locking nibs into the niches 18 by means of the lug 20, guided in the groove portion 24 of the outer breech case 3 so that the breech bolt is locked to the breech frame. During this last phase of movement the lug 29 is arrested by the sear lug 73 and is stressed by the breech action, which moves ahead of it. The rifle is now again ready for firing.

In Fig. 13 the full line arrows show the course of the lug 20 when unlocked, while the dotted arrows show the course of the lug in the guiding grooves 21 to 24, when the breech action is locked. On unlocking the breech action, the striker 25, with its securing nose 30, is brought out of the deep recess 32 into the less deep recess 33 in the end of the breech bolt by rotating the latter, whereby the point of the striking pin 25 is drawn back into a safety position (Figs. 28 and 29). By locking the breech action the nose 30 comes again in front of the deep recess 32 of the breech bolt; and the striker on being released and engaging the recess 32 with its nose 30, can shoot forward and detonate the cartridge. In the improved rifle the recoil of the barrel is not so large as the whole movement necessary for opening the breech action, but is only a fraction of the whole movement of the breech action. The two groove portions 21 and 22 may be replaced by a single oblique groove.

The hereinbefore described improved automatic military rifle, has the following main advantages with regard to the ordinary automatic firearms mentioned at the beginning of this description:

1. The unlocking of the breech action and the loosening of the discharged cartridge case occurs during the recoil of the barrel not in a sudden manner, but gradually, owing to the low pitch of the part 22 of the guiding groove in the fixed outer breech case.

2. The opening of the breech action occurs only after the cartridge has left the barrel and only after the barrel has completed its recoil.

3. The opening of the breech action in the improved automatic loading firearm is effected in two stages. In the first stage the tightly pressed-in cartridge case is loosened slowly but surely, owing to the circumstance that the breech bolt is rotated gradually during the recoil of the barrel and is drawn back a short distance together with the empty cartridge case by the action of the great transverse pitch of the bolting nibs.

4. The total opening of the breech action is then effected during the second phase, by the fact that the breech bolt alone shoots back, whereby the cartridge case is entirely withdrawn from the barrel and is ejected when the breech bolt is in its rearmost position.

5. Sufficient time is afforded between the temporary arresting of the opened breech action and its shooting forward, to allow of carrying a fresh cartridge from the magazine into the loading aperture.

6. The arrangement of the bolting nibs on the rear end of the breech bolt allows of shortening the breech bolt and effects a saving in space, which otherwise would be occupied by the locking device, if the bolting nibs were arranged on the forward end of the breech bolt as is the case in the ordinary self-loading firearms, so that the bolting is effected directly behind the barrel.

7. By the omission of the bolt actuating sleeve and the spiral pieces used in the already mentioned and known self-loading firearms for the rotation of the breech bolt, the space which would be required for the movement of said bolt actuating sleeve is also saved.

By the arrangements above described, and by the circumstance that the recoil of the barrel is a portion only of the whole movement of the breech action a very short breech action is obtained, which allows of applying the present invention to short firearms, for instance, cavalry carbines.

What I claim is:

1. In a self-loading firearm, a sliding barrel, a breech action consisting of a breech frame, a breech bolt capable of being locked to the rear of the breech frame, a fixed outer breech case forming a guide for the barrel and the breech frame, separate springs stressed by the recoil for moving the barrel and the breech action, means on the fixed breech case for limiting the recoil of the barrel, the recoil stroke of the barrel being less than the whole movement of the breech action, a lug on said breech-bolt projecting into a guide groove on the inside of the fixed breech case, said groove being so formed with respect to the breech bolt that a reciprocatory rotation of the latter is effected during the to-and-fro motion of the barrel and the breech action, whereby an unlocking and relocking of the breech bolt is effected by the guide groove in such a manner that the unlocking of the breech bolt is effected shortly before the end of the recoil of the barrel.

2. In a self-loading firearm, a sliding barrel, a breech action consisting of a breech frame, a breech bolt capable of being locked to the rear of the breech frame, a fixed outer breech case forming a guide for the barrel and the breech frame, separate springs stressed by the recoil for moving the barrel and the breech action, a stop on the fixed breech case for limiting the recoil of the barrel, the recoil stroke of the barrel being less than the whole movement of the breech action, a lug on said breech bolt projecting into a guide groove on the inside of the breech case, said groove consisting of a portion parallel to the middle axis of the outer breech case for guiding the breech bolt in a straight direction and of two groove portions arranged obliquely to said axis for opening and closing the breech bolt during the to-and-fro motion of the barrel and the breech action, whereby the unlocking of the breech bolt is effected shortly before the end of the recoil of the barrel.

3. In a self-loading firearm, a sliding barrel, a breech action consisting of a breech frame, a breech bolt capable of being locked to the rear of the breech frame, a fixed outer breech case forming a guide for the barrel and the breech frame, separate springs stressed by the recoil for moving the barrel and the breech action, means on the fixed breech case for limiting the recoil of the barrel, the recoil stroke of the barrel being less than the whole movement of the breech action, said breech frame provided with a guide groove on the inside having a portion parallel to the middle axis of the outer breech case and of two portions arranged obliquely to said axis, a lug on the breech bolt formed in one piece with the latter and projecting into the guide groove and serving to rotate the breech bolt, said lug assuming an upright position in the locked position of the breech bolt and passing first through the rear oblique groove part with downward rotation of the breech bolt in order to unlock the latter while it passes through the front oblique groove portion of the guide groove with upward rotation of the breech bolt in order to relock the breech bolt, the unlocking and relocking of the breech bolt being effected by the guide groove in such a manner that the unlocking of the breech bolt is effected shortly before the end of the recoil of the barrel.

4. In a self-loading firearm, a sliding barrel, a breech action consisting of a breech frame having locking niches in its rear end, a breech bolt having the locking nibs on its rear end rotatable in said locking niches and being in a horizontal plane when they are in the locked position, a fixed outer breech case forming a guide for the barrel and the breech action, separate springs stressed by the recoil for moving the barrel and the breech action, means on the fixed breech case for limiting the recoil of the barrel, the recoil stroke of the barrel being less than the whole movement of the breech action, a lug on said breech bolt projecting into a guide groove in the breech case, said groove having rhomboidal form and being so arranged with respect to the breech bolt that a rotation of the breech bolt in one or the other direction is effected during the to-and-fro motion of the barrel and the breech action, whereby an unlocking and relocking of the breech bolt is effected by the guide groove in such a manner that the unlocking of the breech bolt is effected shortly before the end of the recoil of the barrel.

5. In a self-loading firearm, a sliding barrel, a breech action consisting of a breech frame, a breech bolt adapted to be bolted to the rear of the breech frame, a fixed outer breech case forming a guide for the barrel and the breech frame, a spring stressed by the recoil of the barrel and acting upon the latter, a second spring stressed by the recoil and serving to close the breech action, a nut on the breech bolt having a lateral arm projecting through a guide groove in the outer breech case, said nut being prevented from rotating by said arm while the breech bolt can rotate with regard to the nut in an unobstructed manner, a handle movable on said lateral arm, a rod adapted to be coupled with said handle, the closing spring acting upon said handle by means of the rod, means on the fixed breech case for limiting the recoil of the barrel, the recoil stroke of the barrel being less than the whole movement of the breech action, said breech bolt having a lug projecting into a guide groove in the fixed breech case, said groove being so formed and arranged that a reciprocatory rotation of the breech bolt is effected during the to-and-fro motion of the barrel and the breech action, whereby an unlocking and relocking of the breech bolt is effected in such manner that the unlocking of the breech bolt is effected before the end of the recoil of the barrel.

6. In a self-loading firearm, a sliding barrel, a breech action consisting of a breech frame, a breech bolt adapted to be locked to the rear of the breech frame, a fixed outer breech case forming a guide for the barrel and the breech frame, separate springs stressed by the recoil for moving the barrel and the breech action, means on the fixed breech case for limiting the recoil of the barrel, the recoil stroke of the barrel being less than the whole movement of the breech action, a lug on said breech bolt projecting into a guide groove in the breech case, said groove being so formed and arranged that a reciprocatory rotation of the breech bolt is

effected during the to-and-fro motion of the barrel and the breech action, whereby an unlocking and relocking of the breech bolt is effected in such a manner that the unlocking of the breech bolt is effected before the end of the recoil of the barrel, a rockable obstructing double acting locking lever arranged below the breech frame, and a spring acting upon the lever, the latter serving to arrest the breech frame and the breech bolt before the relocking of the breech action is achieved in order to keep the loading aperture open for the ejection of the discharged cartridge case and for the insertion of a fresh cartridge.

7. In a self-loading firearm, a sliding barrel, a breech action consisting of a breech frame, a breech bolt adapted to be bolted to the rear of the breech frame, a fixed outer breech case forming a guide for the barrel and breech frame, a spring stressed by the recoil of the barrel and acting upon the latter, a second spring stressed by the recoil and serving to close the breech action, a nut on the breech bolt having a lateral arm projecting through a guide groove in the outer breech case, said nut being prevented from rotating by said arm while the breech bolt can rotate with regard to the nut in an unobstructed manner, a handle movable and fixable upon said lateral arm, a rod connected with the breech bolt and adapted to be coupled with said handle, the closing spring acting upon said rod, means on the fixed breech case for limiting the recoil of the barrel, the recoil stroke of the barrel being less than the whole movement of the breech action, a guide groove in the fixed breech case, said breech bolt having a lug projecting into the guide groove, said groove being so formed and arranged that a reciprocatory rotation of the breech bolt is effected during the to-and-fro motion of the barrel and the breech action, whereby an unlocking and relocking of the breech bolt is effected in such a manner that the unlocking of the breech bolt is effected before the end of the recoil of the barrel, a rockable double acting locking lever arranged below the breech frame and provided with two long, oppositely directed inclined ramps, a spring acting upon said lever, an obstructing nose on said lever adapted to arrest the breech action in its rearmost position, a downwardly extending lug provided on the breech frame and adapted to strike one of said inclined ramps of the locking lever when the breech frame shoots forward, whereby the obstructing lever is pressed downward so as to release the breech action, a second obstructing nose on said locking lever projecting over the inclined ramp which is engaged by the lug of the breech frame, said second nose arresting the breech frame with its lug until a downwardly projecting lug of said nut of the released breech action mounts the second of said inclined ramps of the locking lever, the latter being then pressed down until the lug of the breech frame is disengaged and therefore the latter together with the breech action can carry out the last stage of the movement in order to bolt the breech action.

8. In a self-loading firearm, a sliding barrel, a breech action consisting of a breech frame, a breech bolt adapted to be locked to the rear of the breech frame, a fixed outer breech case forming a guide for the barrel and the breech frame, separate springs stressed by the recoil for moving the barrel and the breech action, means on the fixed breech case for limiting the recoil of the barrel, the recoil stroke of the barrel being less than the whole movement of the breech action, said breech bolt having a lug projecting into a guide groove in the breech case, said groove being so formed and arranged that a reciprocatory rotation of the breech bolt is effected during the to-and-fro motion of the barrel and the breech action, whereby an unlocking and relocking of the breech bolt is effected in such a manner, that the unlocking of the breech bolt is effected before the end of the recoil of the barrel, a cartridge depressor, rings connecting the depressor to the breech bolt so as to permit the latter to rotate freely during its reciprocating movements, means for guiding the cartridge depressor below the breech bolt, said depressor sharing the to-and-fro motion of the breech bolt to press the cartridges into the chamber to allow the breech frame and the barrel to slide to-and-fro above said cartridges.

9. In a self-loading firearm, a sliding barrel, a breech action consisting of a breech frame, a breech bolt adapted to be locked to the rear of the breech frame, a fixed outer breech case forming a guide for the barrel and the breech frame, separate springs stressed by the recoil for moving the barrel and the breech action, means on the fixed breech case for limiting the recoil of the barrel, the recoil stroke of the barrel being less than the whole movement of the breech action, said breech bolt having a lug projecting into a guide groove in the breech case, said groove being so formed and arranged that a reciprocatory rotation of the breech bolt is effected during the to-and-fro motion of the barrel and the breech action, whereby an unlocking and relocking of the breech bolt is effected in such a manner, that the unlocking of the breech bolt is effected before the end of the recoil of the barrel, a cartridge depressor, slotted resilient rings on the breech bolt connecting the depressor to the latter to permit said breech

bolt to rotate freely during its reciprocating movements, said rings having enlarged tongues gripping in corresponding recesses in the cartridge depressor, said tongues being made conical to enable the cartridge depressor to be disengaged from and engaged with the rings without the use of a tool.

In testimony that I claim the foregoing as my invention, I have signed my name in presence of two subscribing witnesses.

HANS STAMM.

Witnesses:
M. VOITEL,
FRANK TIMMKE.