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A. ODKOLEK.

MAGAZINE FIRE ARM.

No. 422,327. Patented Feb. 25, 1890.

Fig. 1

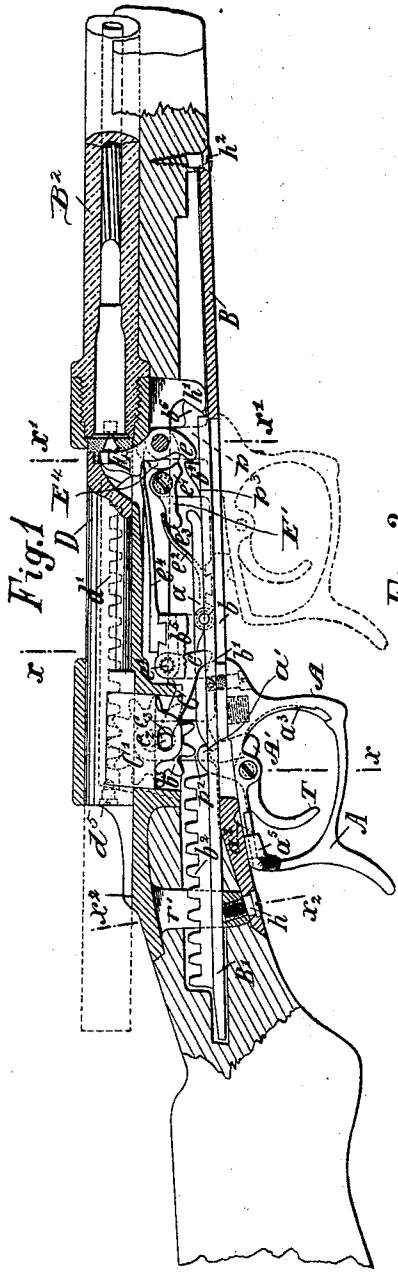
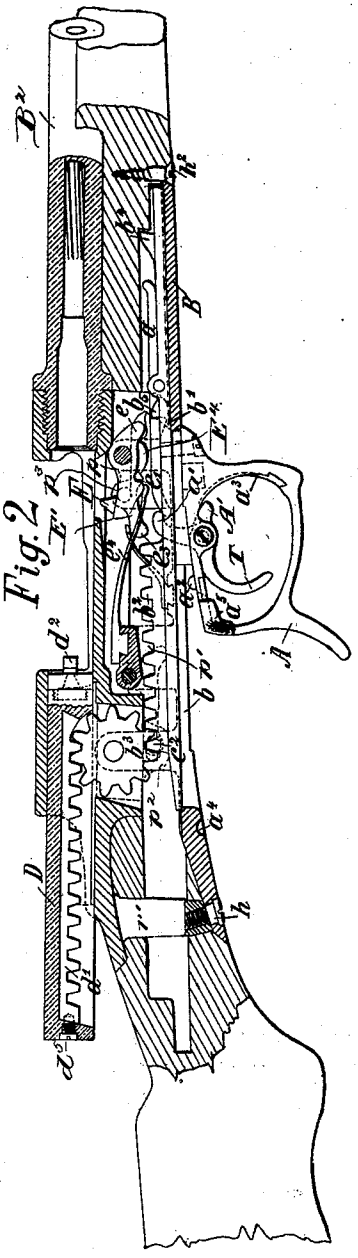


Fig. 3



Fig. 2



Witnesses:
J. Thomson Cross
Mell. E. Boyce

Inventor
Adolf Odkolek
Freiherr von Augezd
per Henry Orth
Atty.

N. PETERS. Photo-Lithographer. Washington, D. C.

(No Model.) 3 Sheets—Sheet 2.

A. ODKOLEK.

MAGAZINE FIRE ARM.

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Fig. 4

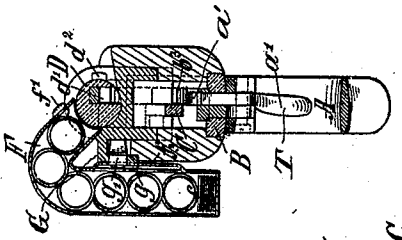


Fig. 12

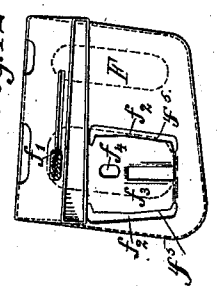


Fig. 13

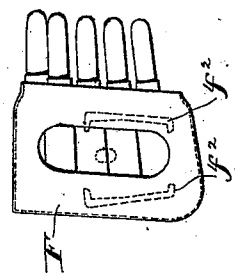


Fig. 16.

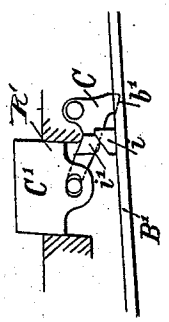


Fig. 15.

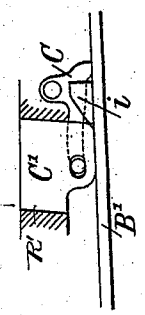


Fig. 5

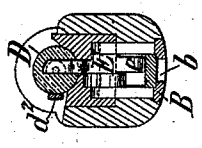


Fig. 14

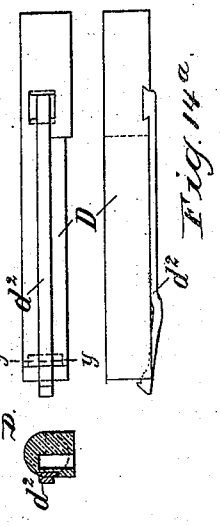


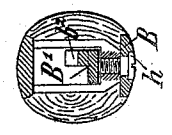
Fig. 14a.

Fig. 14b.

Fig. 7



Fig. 6



Witnesses.
J. Thomson Cross
Mill. & Rozzee

Inventor:
Adolf Odkolek,
Freiherr von Augezd.
per Henry Orth
Atty

N. PETERS, Photo-Lithographer, Washington, D. C.

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Fig. 8

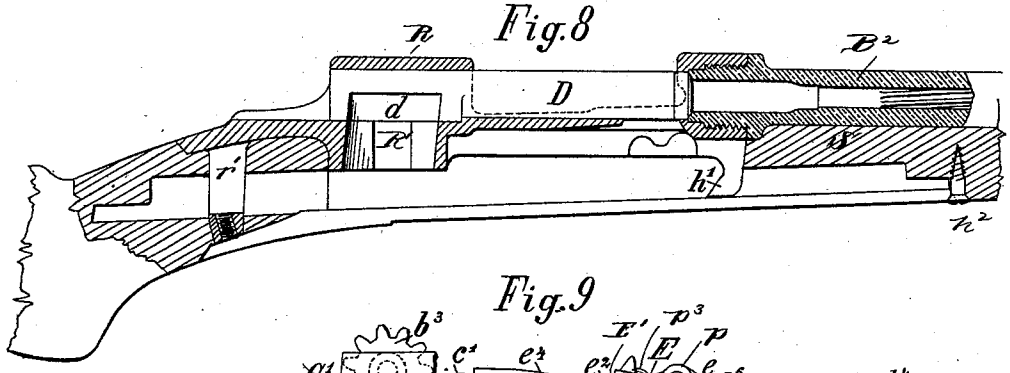


Fig. 9

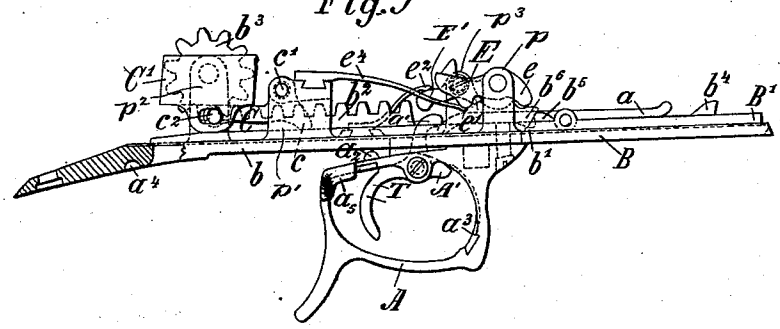


Fig. 10

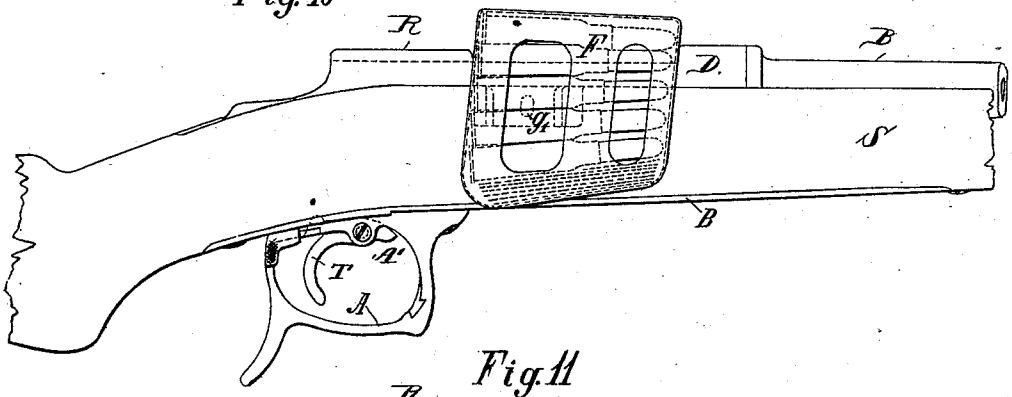
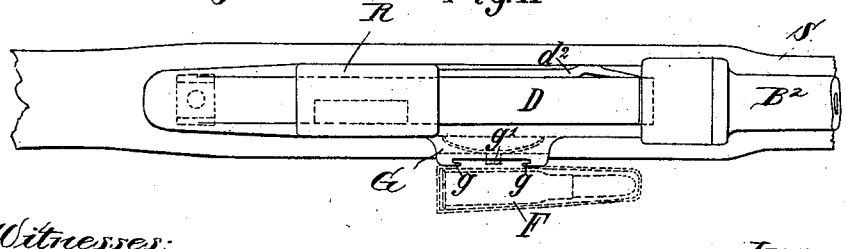


Fig. 11



Witnesses:

J. Thomson Cross.

Milt. E. Rouzee

Inventor.

Adolf Odkolec

Freiherr von Augezd

per Henry Orth

Atty.

N. PETERS. Photo-Lithographer. Washington, D. C.

UNITED STATES PATENT OFFICE.

ADOLF ODKOLEK, OF VIENNA, AUSTRIA-HUNGARY.

MAGAZINE FIRE-ARM.

SPECIFICATION forming part of Letters Patent No. 422,327, dated February 25, 1890.

Application filed March 26, 1889. Serial No. 304,789. (No model.)

To all whom it may concern:

Be it known that I, ADOLF ODKOLEK, freiherr von Augezd, captain of horse in the Austrian army, a subject of the Emperor of Austria, residing at Vienna, in the province of Lower Austria, in the Empire of Austria-Hungary, have invented certain new and useful Improvements in Magazine Fire-Arms; 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 drawings, and to letters of reference marked thereon, which form a part of this specification.

Referring to the drawings, Figure 1 is a longitudinal axial sectional elevation of so much of a breech-loading gun as will be necessary to illustrate my invention, the parts being shown in their respective positions after firing. Fig. 2 is a like view showing the parts in their respective positions when the breech-bolt is drawn back and the receiver open to receive a fresh cartridge. Fig. 3 is a top plan view of the sliding trigger-guard plate or bar, percussion-firing mechanism, and the breech-bolt-locking devices, the pinion for imparting motion to the bolt being shown in section. Figs. 4, 5, and 6 are sections taken, respectively, on lines $x\,x$, $x'\,x'$, and $x^2\,x^2$ of Fig. 1. Fig. 7 is a detail view of the locking-lever for locking the trigger-guard plate or bar to the stock. Fig. 8 is a longitudinal section of the gun, part thereof and the sliding breech-bolt being shown in elevation, the bolt operating and firing mechanisms being removed, showing the construction of the receiver and bolt. Fig. 9 is a side elevation of the sliding trigger-guard plate and the mechanism carried thereby shown in Fig. 3. Fig. 10 is a like view of the gun, showing the magazine applied; and Fig. 11 is a top plan view thereof. Fig. 12 is a side elevation of the magazine, taken from the gun side; and Fig. 13 is a like view taken from the off or out side of a modified construction of said magazine. Fig. 14 is a side elevation; Fig. 14^a, a top plan view; Fig. 14^b, a section on line $y\,y$ of Fig. 14 of the sliding bolt; and Figs. 15 and 16 are detail views of modifications in the means for operating the locking-block for the sliding breech-bolt.

The invention relates to that class of breech-loaders in which the breech is closed by a sliding bolt, and known as "straight pull-bolt guns," and has for its object certain improvements, whereby the time for loading and firing is materially shortened, and to so construct the gun as to adapt it for use as a single-loader or repeating gun.

The invention consists in the mechanism for operating the breech-bolt, through the medium of the trigger-guard; in the combination, with a bolt-gun, of a percussion-firing mechanism comprising a hammer and the necessary mechanism for locking said hammer into position for firing, and releasing the same in firing in contradistinction to the spring-actuated firing-pin usually employed in bolt-guns; in mechanism for automatically placing the firing mechanism in position for firing and simultaneously therewith loading the gun for firing; in structural features whereby the entire operative or actuating mechanism may be bodily and readily removed from the gun, and in certain structural features and combinations of parts and mechanisms, substantially as hereinafter fully described and claimed.

The invention further consists in the combination, with a gun of the class described, of a magazine adapted to be applied to one side of the receiver and provided with means for delivering the cartridges from above into said reservoir, substantially as hereinafter fully described and claimed.

In the drawings, B^2 indicates the barrel; S, the stock, and R the receiver, which, as more plainly shown in Fig. 8, is provided with a chamber for the reception of the gun-lock and breech-bolt-operating mechanism, a slot r being formed at the front end of said chamber for the passage of the hammer in firing, and at its rear end with a slot R′ for a locking-block that serves to lock the breech-bolt against endwise motion under recoil in firing, the said receiver being further provided at its rear end with a post r', the lower end of which is screw-threaded for securing said receiver to the stock, the barrel being screwed, as usual, into the forward end of the receiver.

The chamber in the receiver is closed at bottom by a lock-plate B, that is provided with a longitudinal slot b, and is secured at its forward end to the stock by means of an overlapping screw h^2 and by means of forwardly-inclined lugs b^6, bearing against corresponding shoulders h', formed at the forward end of the receiver-chamber. At its rear end the lock-plate B is secured to the stock by means of a screw h, that screws into the post r', depending from the tang of the receiver R, so that by unscrewing the screw h and simply loosening the screw h^2 the lock-plate B can be removed, and with it the lock and breech-bolt operating mechanisms. The hammer and its spring, the sear and its spring, and the pinion that imparts motion to the breech-bolt are carried by the lock-plate B.

The hammer E is pivoted in bearings formed in a post p and has an arm e and a shoulder against which bears the main or hammer spring e^4, which is connected by tongue-and-groove joint with a bracket or post p'.

The sear E′ is pivoted in bearings formed in a post p^3 and provided with an arm e^3, upon which bears the free end of the sear-spring connected with the lock-plate B by a tongue-and-groove joint, said sear having a second arm e', adapted to engage the full-cock notch formed in a tumbler E^4, rigidly secured to the hammer-pivot or forming an integral part of the hammer E. Finally, the pinion b^3 is journaled in bearings formed in a post p^2.

By connecting the main or hammer spring e^4 and the sear-spring e^2 with their supports, as described, said springs can be readily removed in case of breakage and others substituted.

The posts that support the main or hammer spring e^4 and the hammer E are arranged to straddle the slot b in the lock-plate B and serve as guides for the movements of the sliding trigger-guard plate or bar B′, which lies between the lugs of said posts, while the post which supports the pinion is arranged on one side of the said slot.

The trigger-guard A is secured to a slide bar or plate B′, the arm a' of the trigger T pivoted to the guard projecting through the slot b in lock-plate B, said trigger-guard serving as a handle to plate B′ for imparting horizontal motion thereto.

The rear end of the trigger-guard plate B′ is constructed in the form of a toothed rack b^2 and is adapted to gear with the pinion b^3, which latter is in perpetual gear with a toothed rack d', formed on or secured within a suitable recess formed in the cylindrical breech-bolt D, that is adapted to slide to and fro in the receiver R.

As more plainly shown in Fig. 2, the toothed rack d' is formed with an inclined bearing-face at its forward end that abuts against a corresponding shoulder in the breech-bolt, while at its rear end, the contacting-faces incline in a reverse direction, so that a single screw d^5, screwed through the rear wall of the bolt, is all that is required to lock the toothed rack in position.

It is obvious that if the trigger-guard plate B′ is moved in one direction or toward the barrel the breech-bolt D will move in a reverse direction to open the breech and receiver for the reception of a fresh cartridge, at the same time ejecting the empty shell, if any, through the medium of the extractor d^2, arranged in the usual manner, as shown in Figs. 2, 11, 14, 14^a, and 14^b. A motion of the trigger-guard plate in a reverse direction will, on the contrary, cause the breech-bolt D to move forward and close the breech, at the same time carrying a cartridge introduced into the receiver into the breech-chamber. On a pin c', secured to post p', is fulcrumed a lever C, one arm c of which lies in a notch b', formed by two inclined projections or teeth on the trigger-guard plate B′. The other arm of lever C has a stud c^2, that projects into a horizontal slot c^3, formed in an ear on the under side of a locking-block C′, that is adapted to slide in the slot or housing R′, hereinbefore referred to, and into a recess d, Fig. 8, formed in the under side of the breech-bolt D, when said bolt is in a position to close the breech of the gun, as shown in Fig. 1. As the trigger-guard plate moves forward the arm c of lever C moves out of the notch b' over the rear tooth or projection, allowing the locking-block C′ to drop down out of the recess d in the breech-bolt D, so as to allow said bolt to move backward.

As an alternative device for operating the locking-block C′, the trigger-guard plate B′ may be provided with an inclined face i, which may act directly upon the said locking-block by passing under the same to lift it into the recess d of the breech-chamber on the backward movement of the plate B′, as shown in Fig. 15; or said incline may operate on a lug or projection i' on the side of the actuating-lever C, as shown in Fig. 16. In the former construction the actuating or lifting lever serves as a guide for the block, and also serves to prevent the block from binding in its housing on being lifted by the incline i; or said lever may be dispensed with, the block falling down of its own weight as the trigger-guard plate moves forward. In the construction shown in Fig. 16 the lowering of the block is effected by the incline b' acting upon lever C, as above described. The locking-block may also be so arranged as to pass in rear of the breech-bolt when the latter is in its normal position to close the breech, and the lifting-lever C may be fulcrumed on a pin or stud secured to the receiver instead of pivoting the lever to a post on the lock-plate B.

The trigger-guard plate B′ has a greater range of motion than the breech-bolt, and the toothed rack b^2 has preferably a less number of teeth than the rack d' of said bolt, so that the said rack b^2 will move out of gear with the pinion b^3 when the trigger-guard plate is

about to reach the limit of its rearward motion, and the extent of forward motion of the plate B′ before the said toothed rack engages the pinion is sufficient to first disengage the locking-block C′ from the breech-bolt D, in the manner described, the engagement of the toothed rack b^2 with the pinion taking place immediately after the block C′ has cleared the recess d in the breech-bolt.

To the trigger-guard plate B′ is pivoted a lever a, upon the downturned rear end of which bears the detent or actuating arm a' of the trigger T, while the forward upturned end of said lever is adapted to engage the arm e^3 of the sear, when the parts are in position for firing, as shown in Fig. 1, wherein the firing mechanism is shown in its position after the sear E′ has been released from the full-cock notch e^5 in tumbler E^4 through the medium of said lever a.

The hammer E is brought to a full-cock on the forward movement of the trigger-guard plate B′ through the medium of a projection b^4, secured to plate B′ near its forward end, the vertical face of said projection engaging the arm e of the hammer E and turning it against the stress of its spring e^4, and with it the tumbler E^2 against the stress of the sear-spring e^2. The projection b^4 is curved or inclined rearwardly, so as to slide under the arm e of the hammer when the trigger-guard plate B′ is moved back, leaving the hammer at full-cock. Before the plate B′ reaches the limit of its backward motion the toothed rack b^2, as previously explained, is disengaged from the pinion b^3, and simultaneously therewith or immediately thereafter the vertical face of the notch b' engages the arm c of lever C, moving the same downward, while the arm of said lever that carries the block C′ is moved upward and into the recess d of the breech-block D, the gun being then ready for firing.

During the reciprocating motion of the trigger-guard plate B′ the following operations take place: On the forward movement of the plate—say immediately after firing—the locking-block C′ is first disengaged from the breech-bolt. The toothed rack b^2 on said plate is next brought into gear with the pinion b^3. The breech-bolt D is moved backward, the extractor d^2 throwing out the empty shell. The shoulder b^4 on plate B′ next engages the hammer-arm e and brings the hammer to a full-cock, as described, the plate being moved forward until the said shoulder b^4 abuts against a stop-shoulder formed in the stock, (see Fig. 2,) at which time the breech-bolt will also have reached the limit of its backward motion, completely clearing the top opening in the receiver for the reception of a cartridge, which may be introduced by hand or fed thereto, as will be presently described. On the backward motion of the plate B′ and the simultaneous forward motion of the breech-bolt D and cartridge all of the remaining mechanism will remain in the position in which it was brought during the forward movement of the plate B′ until the said plate has moved back sufficiently to disengage the toothed rack b^2 from pinion b^3, when the lever that carries the sliding block will be tilted to move the locking-block C′ into the recess d in the breech-bolt D, which has then reached the limit of its forward motion and has carried the cartridge into the breech, when, by pressing the trigger, the intermediate lever a will be tripped and its forward upturned end will act upon the sear E′ to release the hammer, as above described. During these movements of the trigger-guard plate it is not necessary that the trigger be released. In fact, such trigger may be kept under pressure all the time from the time the gun is first fired, so that the subsequent firing will take place automatically, for as soon as the locking-block has moved into the recess of the breech-block D the upturned forward end will engage the sear and release the hammer. It will be readily seen that the gun can be more rapidly fired than would be the case were it necessary to release the trigger at each loading motion. On the other hand, the marksman has a firmer grip on the trigger-guard by keeping his finger on the trigger than would be the case otherwise.

When the gun is not in use, to prevent any accidental movement of the trigger-guard plate, I provide a spring-catch consisting of a two-armed lever A′, pivoted on the trigger-pivot, whose nose a^2 is adapted to engage a locking-notch a^4 in the lock-plate B, and is held in engagement with said notch by a spring a^3, secured to the trigger-guard, the free end of said spring acting upon the forward arm of the lever. The locking-nose of the catch and the recess in the plate being of curvilinear form a slight push on the trigger-guard will readily unlock the same in loading.

When the gun is not in use, to avoid an accidental discharge when loaded and ready for firing, I provide a sliding sleeve a^5, mounted on the trigger-guard and adapted to slide under the locking-lever A and abut against the back of the trigger, thereby preventing the latter from tripping the intermediate actuating-lever a to release the firing mechanism and at the same time preventing the spring-catch being disengaged from the locking-notch.

The gun constructed as described may be used as a repeating-gun, and is provided with means for connecting a magazine with the receiver. These means may be of any suitable character, or they may consist, as shown, in the overhanging lip or ledge G, the grooves g, formed on opposite sides thereof, and a spring-actuated stud g', (see Fig. 11,) for use with the magazine F, (shown in Figs. 10, 12, and 13,) the construction of which I do not desire to claim herein.

Having described my invention, what I claim is—

1. In a breech-loading gun of the class de-

scribed, the combination, with the receiver and breech-bolt, of a rack-and-pinion mechanism for imparting horizontal motion to the bolt, substantially as described.

2. In a breech-loading gun of the class described, the combination, with the receiver and breech-bolt, the latter being provided with a toothed rack, of a sliding rack-bar, and an intermediate pinion adapted to gear with both toothed racks for imparting horizontal motion to the breech-bolt, substantially as described.

3. In a breech-loading gun of the class described, the combination, with the receiver, the breech-bolt provided with a toothed rack, a sliding rack-bar, and an intermediate pinion adapted to gear with said toothed rack and rack-bar, of a locking-block arranged in the path of the said breech-block and a lifting device operated from the rack-bar to lift the block into engagement with the breech-bolt, substantially as and for the purposes specified.

4. In a breech-loading gun of the class described, the combination, with the breech-chamber, the receiver, the breech-bolt, a slide-bar provided with a vertical shoulder or projection, and gearing connecting the slide with the breech-bolt for imparting a horizontal motion to the latter, of a firing mechanism consisting of a hammer having an arm arranged in the path of the projection or shoulder on said slide-bar, and a locking device to lock the hammer into a position for firing, substantially as and for the purposes specified.

5. In a breech-loading gun of the class described, the combination, with the breech-chamber, the receiver, the breech-bolt, a slide-bar, a two-armed lever fulcrumed on said bar, a trigger adapted to engage one of the arms of the lever, and gearing connecting the bar with the breech-bolt, of a firing mechanism consisting of a hammer, and a locking device to lock the hammer into position for firing, adapted to be operated by the lever when pressure is applied to the trigger to release the hammer, substantially as described.

6. In a breech-loading gun of the class described, the combination, with the receiver, the breech-bolt provided with a toothed rack, and a pinion in perpetual gear therewith, of a sliding rack-bar adapted to gear with said pinion, the range of motion of which bar is greater than that of the breech-bolt, so that when said bar reaches the limit of its motion in one direction it will be out of gear with the pinion, substantially as and for the purposes specified.

7. In a breech-loading gun of the class described, the combination, with the receiver, the breech-bolt provided with a toothed rack, and a pinion in perpetual engagement therewith, of a sliding rack-bar adapted to gear with said pinion, the range of motion of which bar is greater and the number of its teeth less than the range of motion and number of teeth of the breech-bolt and its toothed rack, respectively, substantially as and for the purposes specified.

8. In a breech-loading gun of the class described, the combination, with the receiver, the breech-bolt provided with a toothed rack, and a pinion in perpetual gear therewith, a sliding rack-bar adapted to gear with said pinion, the range of motion of which bar is greater than that of the breech-bolt, so that the movable rack will be disengaged from the pinion as it reaches the limit of its motion in one direction, of a locking-block and a lifting device controlled by the sliding rack-bar and timed to lift the block into engagement with the breech-bolt as said rack is moving out of gear with the pinion, substantially as and for the purposes specified.

9. The combination, substantially as described, with the receiver of a breech-loading gun of the class mentioned, the sliding breech-bolt provided with a toothed rack arranged in a recess thereof, and a pinion mounted on a fixed pivot in perpetual gear with said rack, of a sliding trigger-guard plate geared to the breech-block and whose rear end is constructed in the form of a toothed rack having a less number of teeth than the rack of the breech-bolt, and provided with a notch b', formed by two projections or teeth having inclined upper faces, a locking-block C′, in which is formed a horizontal slot c^3, and a two-armed lever C, one arm whereof is provided with a stud or pin extending into the slot c^3, the other arm lying in the path of the notch b', for the purposes specified.

10. The combination, substantially as described, with the receiver of a breech-loading gun of the class mentioned, the sliding breech-block, a slide bar or plate provided with a vertical shoulder b^4, of a firing mechanism consisting of a hammer pivoted on a fixed pivot and having an arm e extending into the path of the shoulder b^4, a tumbler having a full-cock notch, a sear E′, and a hammer and sear-spring, for the purposes specified.

11. The combination, substantially as described, with the receiver of a breech-loading gun of the class mentioned, the sliding breech-bolt, a slide bar or plate provided with a vertical shoulder b^4 and gearing connecting said bar or plate with the breech-bolt, of a firing mechanism consisting of a hammer pivoted on a fixed pivot and having an arm e extending into the path of the shoulder b^4, a tumbler having the full-cock notch e^6, a sear E′, and a hammer and sear-spring, for the purposes specified.

12. The combination, substantially as described, with the receiver of a breech-loading gun of the class mentioned, the sliding breech-bolt, a slide-bar geared to the bolt, a trigger-guard secured to said plate, a trigger pivotally connected therewith and having an arm extending through a slot in the bar, a two-armed lever a, fulcrumed on said bar, one of which arms is in perpetual engage-

ment with the trigger, of a firing mechanism consisting of a hammer having an arm *e* in the path of the upturned end of the other arm of the lever, a locking mechanism to lock the hammer into position for firing, and means substantially such as described for bringing the hammer into position for firing through the medium of the slide-bar, as specified.

13. The combination, substantially as described, with the receiver R and the gun-stock, of the longitudinally-slotted lock-plate B, carrying the posts p p' p^2 p^3, and the devices secured thereto or mounted thereon, and a bearing for the sear-spring, and the sliding trigger-guard plate B′, said parts being secured in position by a single screw passing through the lock-plate at the rear end and by an overlapping screw at the forward end, for the purposes specified.

14. The combination, substantially as described, with the lock-plate provided with a recess a^4, and the sliding trigger-guard plate and trigger-guard, of a spring-actuated locking-lever A′, adapted to engage said recess, for the purposes specified.

15. The combination, substantially as described, with the lock-plate provided with a recess a^4, and the sliding trigger-guard plate and trigger-guard, of a spring-actuated locking-lever A′, adapted to engage said recess, and the sliding sleeve a^5, arranged to engage the locking-arm of the lever and abut against the back of the trigger, substantially as and for the purposes specified.

In testimony whereof I affix my signature in presence of two witnesses.

ADOLF ODKOLEK, FREIHERR V. AUGEZD.

Witnesses:
EDMUND JUSSEN,
OTTO SCHIFFER.