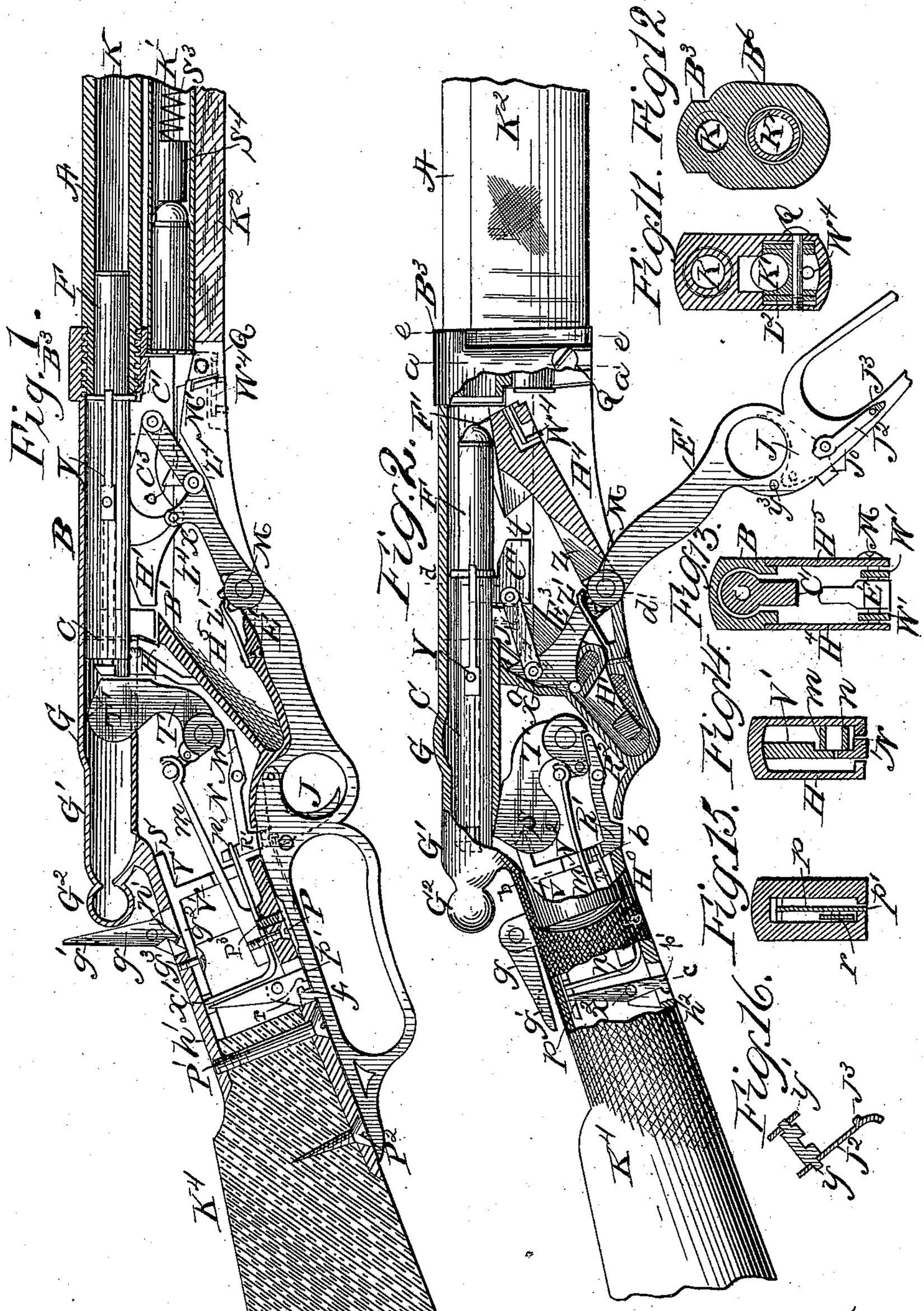
(No Model.) 2 Sheets—Sheet 1.

S. A. SULLENBERGER.

MAGAZINE GUN.

No. 356,338. Patented Jan. 18, 1887.



Witnesses:
Fred. Keller.
B. B. Hamlin Jr.

Inventor:
Samuel A. Sullenberger.
By Theophilus Weaver,
Attorney.

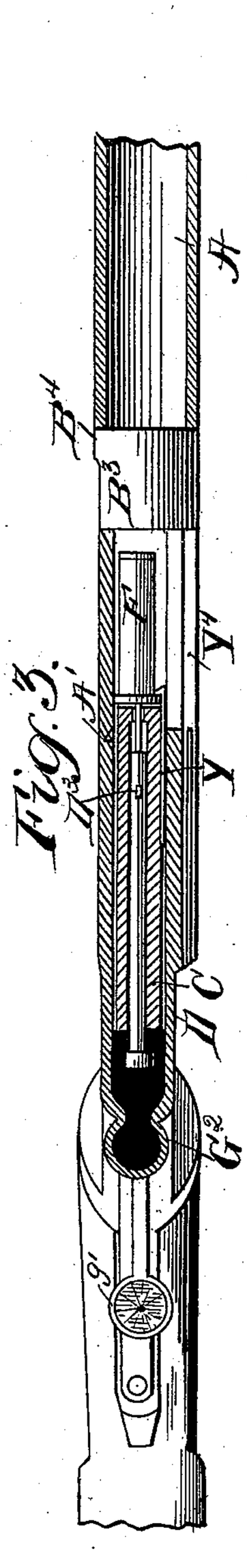
(No Model.) 2 Sheets—Sheet 2.

S. A. SULLENBERGER.

MAGAZINE GUN.

No. 356,338. Patented Jan. 18, 1887.

Fig. 1.



Witnesses:
Fred. Keller
B. B. Hamlin Jr

Fig. 2.

Fig. 10.

Fig. 6.

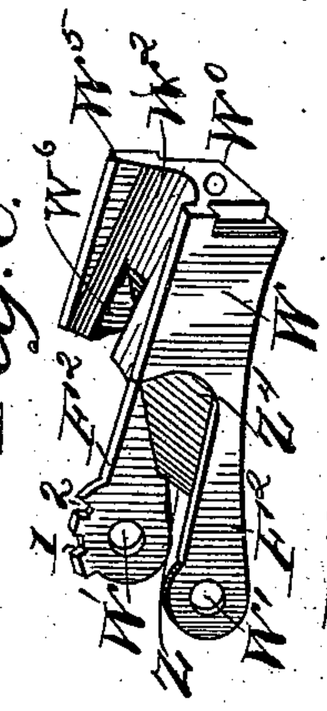


Fig. 7.

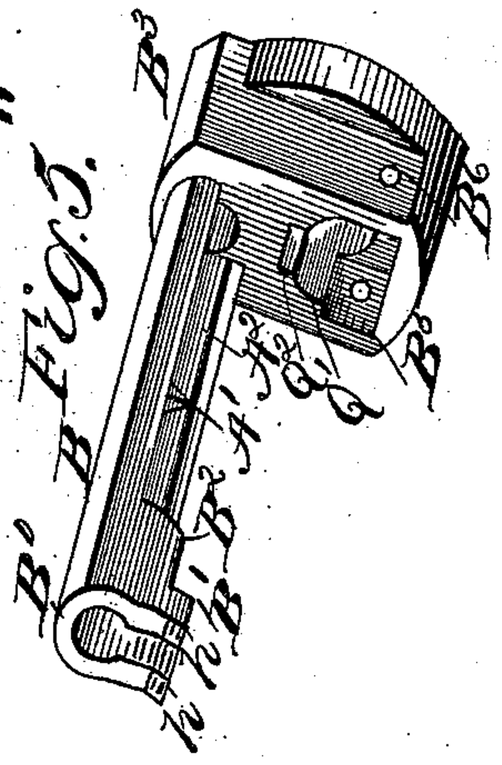


Fig. 4.

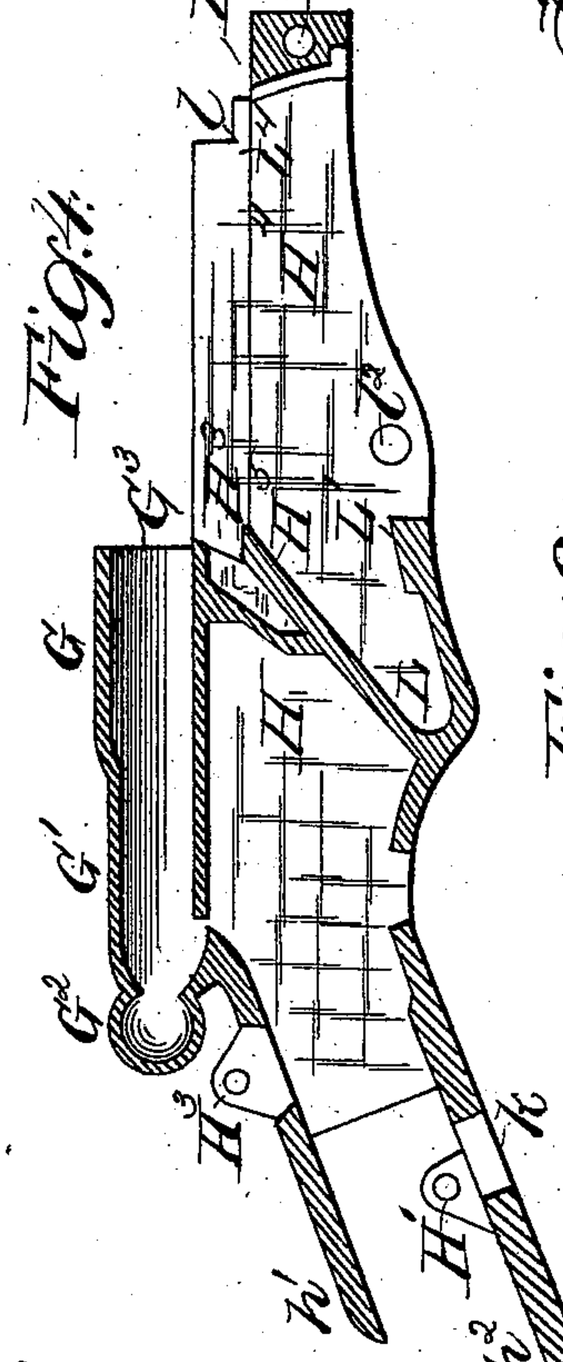


Fig. 8.

Fig. 9.

Inventor:
Samuel A. Sullenberger.
By Theophilus Weaver
Attorney.

UNITED STATES PATENT OFFICE.

SAMUEL A. SULLENBERGER, OF HARRISBURG, PENNSYLVANIA, ASSIGNOR OF TWO-THIRDS TO THEOPHILUS WEAVER AND ELIAS Z. WALLOWER, BOTH OF SAME PLACE.

MAGAZINE-GUN.

SPECIFICATION forming part of Letters Patent No. 356,338, dated January 18, 1887.

Application filed March 6, 1886. Serial No. 194,197. (No model.)

To all whom it may concern:

Be it known that I, SAMUEL A. SULLENBERGER, a citizen of the United States, residing at Harrisburg, in the county of Dauphin and State of Pennsylvania, have invented certain new and useful Improvements in Magazine Fire-Arms; and I do hereby declare that the following is a full, clear, and exact description of the invention, which will enable others skilled in the art to which it appertains to make and use the same.

My present application relates to improvements applicable to my breech-loading fire-arm for which a patent was granted to me November 10, 1885, numbered 330,354, and to other fire-arms of analogous makes employing a longitudinally-movable breech-bolt moved axially in line with the barrel by means of an operating guard-lever pivoted in the breech-chamber below and conjointly operating the breech-brace, and having the hammer automatically cocked by the rear end of the breech-bolt, substantially as shown in said patent.

The object of my present improvement is to render such single-loader a repeating or magazine fire arm, in which said guard-lever, breech-bolt, breech-brace, hammer, sear, receiver, guides for the breech-bolt, and trigger are employed with little change, excepting the extractor on the breech-bolt and a stop-notch in the receiver-wall co-operating therewith.

The main, novel, and useful features of my invention are, first, the union joint or casting into which the butt of the gun-barrel is screwed, and into which the magazine-tube and the fore-end are abutted in the socketed front end of said joint, and the same is extended in the rear to form a tubular receiver, which is cut away on its right side and below to form an opening into it, at which cartridges are inserted and the shells ejected, said extension in rear of the receiver being in the form of a ring which is open below, and in which the tubular part of the breech-bolt slides, said ring-section being massed with recoil-abutments, against which the breech-brace sets, the said abutments being terminated in the rear below in oblique toe-pieces adapted to hold in corresponding recesses in the casing-walls when the front ends of the latter are held abutted in a receptacle therefor in said joint; second, the extractor or spring-catch on the longitudinally-movable breech-bolt, in position thereon to come before the opening on the right side into the receiver, in conjunction with a stop-notch in the wall of the receiver opposite to said opening and transversely arranged to said bolt, so that at said notch while a shell is being retracted it shall be canted and ejected; third, the center-fire pin in the breech-bolt, having a slot or hole in its shaft, into which reaches a projection on the link-coupling, the guard-lever, and the breech-bolt while the latter is being retracted for freeing the point of fire-pin from the pierced shell a little before it comes to position to be ejected; fourth, the safety-lock bar for locking simultaneously the hammer and the sear by the action of a spring only after being released from a detent on the lower end of the pivoted staff of the rear sight when the same is laid down; fifth, the pivoted hook-latch connected with said lock-bar and its actuating-spring in action and adapted to engage a catch on the guard-lever for holding it home against the stock and for releasing said lever without undoing the safety-lock of the hammer and sear; sixth, the carrier pivoted in the breech-chamber by the bolt which fulcrums therein the guard-lever, and having its crown adapted as an inclined way or groove for guiding upward thereon the cartridge after its exit from the magazine and carrying it to the level of the bore in the barrel by the joint action of the guard-lever and a spring operating in a notched shank of the carrier, the incline on the latter being supplemented by a guard on the breech-bolt, adapted to reach into the magazine and time the exit of the cartridge therefrom; seventh, the carrier adapted as a brace for the knee-joint of the guard-lever.

In the accompanying drawings, making a part of this specification, Figure 1 is a vertical section of my fire-arm taken on line corresponding with the axis of barrel, but the guard-lever, breech-bolt, the link coupling the last two, and the fire-pin being shown in side ele-

vation as in position of firing. Fig. 2 is a similar view of the works of the same as in position of loading, but the abutted ends of the casing and wood-work are shown in perspective with part of the stock broken away. Fig. 3 is a top view of the abutted ends of the casing, wood-work, and barrel, and showing the breech-chamber in horizontal section, taken through the axis of the breech-bolt and showing the latter in position for the extractor thereon to eject the shell. Fig. 4 is a vertical section of the breech-chamber through the axis of the tubular guide for the breech-bolt as viewed from the right side. Fig. 5 is a perspective view of the union-joint for connecting the barrel and fore-end inserted into its front end, with the breech-chamber wall spliced to its rear part. Fig. 6 is a perspective view of the carrier. Fig. 7 is a similar view of the connecting-link for joining the guard-lever and breech-bolt. Fig. 8 is a similar view of the breech-block. Fig. 9 is a similar view of the fire-pin. Fig. 10 is a similar view of the lock-bar for the hammer, &c. Figs. 11, 12, 13, 14, and 15, respectively, are cross-sections taken on the lines *e*, *a*, *d*, *b*, and *c* in Fig. 2. Fig. 16 is a sectional view of the trigger lock-stop.

The same letters denote the same parts in descriptions.

The part denoted by A is the gun-barrel.

B is the union-joint, of which A^2 is the receiver, incorporated with the tubular ring-section B^2, in which the round portion of the breech-bolt moves back and forth. A longitudinal slot is in said ring-section below, in which the arm E^3 of the guard-lever E', equipped with studs *x*, and the link J', connecting it to breech-bolt, may retreat in backing said bolt.

B' denotes basal abutments on said ring-section provided with obliquely rearward-directed toe-pieces *h*, which project into corresponding recesses in the abutments H^3 on the breech-chamber walls inside, for keeping the rear end, B^9, of the union-joint locked down when it is joined to the breech-chamber, as hereinafter set forth. The breech-brace H', pivoted to the breech-bolt, sets against said abutments B' when the gun is breeched as a recoil device.

B^3 is a re-enforce or enlargement about the screw-joint at which the gun-barrel is attached.

B^4 is the socketed end into which the fore-end K^2 is abutted, and into which the magazine-tube K' is inserted, as shown.

B^5 is a recess or socket below the exit Q' of the magazine, into which are fitted and secured the front ends of the breech-chamber walls or sides H^4. The same are preferably webbed together at L^2, and a bolt, Q, inserted at B^6 in said union-joint, reaches through said webbed part at hole *l'*, and the webbed part below said bolt-hole is recessed to admit therein under said bolt Q the forward end of a locking-slide, W^4, in the front end of the carrier, for locking the same down at will when the magazine is to be emptied of cartridges without firing. At said union-joint the gun may be divided into two sections or divisions, one of which comprises said joint, the gun-barrel, magazine, and the fore-end all united, and the other comprises the breech-chamber, the gun-stock, and the works of the gun all united, and said joint may be detached from said breech-chamber by simply withdrawing the bolt Q, which may be made a thumb-screw for said purpose, or any other bolt that may be withdrawn without a screw-driver.

The extractor is simply a spring-catch, Y, attached to the breech-bolt on its right side, or in position facing the opening in receiver for inserting the cartridges, the same being extended parallel with the axis of the breech-bolt to bring its catch in position at the front end of said bolt to seize the flange of the cartridge when said bolt is advanced to butt against it in normal position for firing or in breeching the gun. When said spring-catch or extractor has brought back the shell entirely out of the gun-barrel by the breech-bolt being retracted, its flange is engaged by a stop-notch, A', made in the receiver-wall in position opposite to the rear end of the opening in the receiver and opposite to the said spring-catch, and while the breech-bolt continues to retract said spring-catch cants the shell quickly to throw it out of the receiver at said opening therein.

Lest the fire-pin might hinder the ejection of the shell, should its point pierce through it in firing, as sometimes it happens, a regulator is provided for the fire-pin, to extricate said point automatically from the shell before it arrives at the place in the receiver where it is to be ejected. Said regulator consists of a projection, O, like a common saw-tooth, massed on the reversing pivoted link J', that connects the guard-lever with the breech-bolt and adapted to reach through an opening in the under side of the breech-bolt, enter a hole or slot, D^3, in the fire-pin, and register in or touch the rear end of said slot in such manner that it will force the pin back by causing said slot to accommodate itself to let said tooth enter it properly, thus bringing the end or point of the fire-pin flush with the front end of the breech-bolt or free from the shell. Before the latter has been backed far enough to strike the stop-notch therefor the link J' hugs for an instant the breech-bolt, to enter the projection thereon into the slot of the fire-pin when the arm E^3 of the guard-lever is passing over the center and backing the breech-bolt part way.

The safety-lock bar V is a double-spring bolt, for locking both the hammer and sear automatically as soon as the rear sight-staff, *g*, is laid down after the gun is cocked. The same has a main top bolt having the nosing S for engaging the hammer T by reaching into a notch in its top, and it has a foot, V', partially cut away at V^2, to clear the spring *m* of the hammer, and the remnant thereof is adapted to stop directly over and right on the top of

the rear end of sear N, which end is also laterally cut away to clear the said spring *m* and to form a bearing for the spring *n*, which actuates its pawl N′ to hold in the ratchet on the hammer, said foot thus insuring it to hold safely—that is, so that the sear cannot be worked by the trigger J. Said lock-bar V is attached to the under side of the tang *h′* by the screw-stud g^3, which traverses the slot V^4 and limits the throw of said bar, it being laterally guided in the cut-away therefor in the stock or by lugs on said tang. The rear end of said lock-bar has in it the slot V^3, in which the spring X′ is inserted, which is the rear end of the spring *n* for the sear, and it acts to keep said bar in position for locking the hammer and the sear, as well as to move it into that position when it is not held back.

The staff *g* of the rear sight, *g′*, is pivoted, as shown, to lugs on the tang *h′*, and is provided with a foot, *n′*, which is adapted to engage the detent g^2 on said lock-bar, and thereby not only to retract said bar in the act of erecting the staff, but after it is erected, as shown, in unlocked position, said spring and detent g^2 act to keep said staff erect and held against the part G^2, and to keep said bar retracted until said staff is forcibly laid down. This is done naturally at the end of firing. Therefore the safety-locking which automatically occurs then is not liable to be omitted. Moreover, said lock-bar and its actuating-spring are connected in action with the pivoted-hook-latch *p*, which latter, by engaging a catch, *f*, on the guard-lever E′, holds it against the gun-stock, but releasable at will, as follows: Said latch is pivoted below its middle to the post *r* on the tang h^2, and moves less at its lower than at its upper end, and is inserted into the slot V^3 in said lock-bar, said latch oscillating in a vertical plane in a longitudinal kerf in the gun-stock K^4 in the rear of the spring X′. The lower end of said latch is provided with a hook or catch, *p′*, which communicates through a slot in said tang h^2 with a corresponding hook stud or catch, *f*, on the guard-lever, the approaches to the catches being such that they may readily hook onto each other by the hook on the latch being brought up to the other hook after the guard-lever is against the gun-stock, while the staff *g* of the rear sight is being laid down. The spring X′ then advances the lock-bar V, and thereby also trips said latch *p* to hook onto said hook on the guard-lever. Said catches are, however, so shaped that they shall hold by a slant hitch onto each other in order that the guard-lever may be unlocked by using force enough to spring the lock-bar V back a little, thus freeing said catches from each other without undoing the lock of the sear and the hammer, the spring X′ returning said bar again to its normal position for locking the same. So, likewise, after said parts are interlocked, the guard-lever may be brought to locked position by simply pressing it firmly against the stock, which meets the contingency when the guard-lever has been used for removing a cartridge from the gun-barrel or in loading it while the rear sight was not elevated, as firing was not to ensue.

Letter W denotes the carrier for guiding and raising a cartridge in its transit from the exit Q′ of the magazine into the receiver A^2. The carrier is pivoted along with the guard-lever E′ by the bolt M, which fulcrums the latter in the breech-chamber for operating the breech-bolt and the breech-brace and for raising the carrier in the final stage of its backward throw by engaging or striking the lower edge of the web Z.

Letter W^2 denotes an upward inclined way or groove on the crown of the carrier, which, when the carrier is fully depressed, corresponds with the lower margin of the exit Q′, that a cartridge may then issue from the magazine-tube K′ directly onto said way, it being impelled by the energy of the usual spring-follower, S^4.

Letter C′ denotes a guard attached to the under side of the breech-bolt C at its front end, which projects forward to bear with its front end, *t*, against the butt of the cartridge while it is yet in the magazine, and while it is being transferred onto the carrier, the advance of the cartridge being dependent on the withdrawal of the breech-bolt, and hence it is timed by it and prevented from leaping out of the magazine suddenly. Said guard C′ on its upper side is adapted as an incline, which communicates with and supplements the inclined way W^2 the instant the front end of said guard comes to the rear of said way, the carrier then being elevated by the guard-lever engaging it at Z, and the cartridge then being raised, still having the impulse derived from the follower, then completes its ascent up the incline, when its flange rests on the bench W^3 at the front end of the breech-bolt proper. The impulse from the cartridge-follower is cut off, however, the instant the end of the carrier abuts against the next cartridge in the magazine, when the guard-lever completes its throw and brings up fully the carrier's crown, and thereby raises the point of the cartridge which has been transferred into the receiver to be in right elevation to find its way into the gun-barrel on the return of the breech-bolt. At an intervening moment, when the point of the cartridge has just entered the gun-barrel and its flange rests on bench or offset W^3 at the head of the incline on guard C′, the front end, *t*, has returned sufficiently to abut against the crown of the carrier and push it down again during the further advance of the breech-bolt. The spring Z′ engages a second notch, 2, on the shank of the carrier to hold the latter elevated until the breech-bolt performs the final part of its retreat and the initial part of its advance, or arrives in position to sustain the flange of the cartridge, while the guard C′ depresses the carrier until the spring Z′ engages the notch 1, to relieve its descent a little. When the guard-lever has completed its throw in breeching, the knee-joint, where the arm E^3 unites with

the link J′, then firmly rests on the carrier in a retreat or cut-away part, Z^4, which serves as a brace or recoil piece therefor. Said joint's pivot then being a little below the imaginary line that may be drawn from pivot M to pivot M′, the recoil at firing reacts to force said knee to bend onto said brace, which latter is sustained as follows: A tenon, W^0, on the end of the carrier bears squarely on the floor of recess B^5 in the union joint B, which is adapted to both laterally stay and limit the descent of the carrier.

As it may be desired to keep the carrier fully depressed for emptying the magazine quickly without working the guard-lever, it is provided with a locking-slide, W^4, adapted to shoot directly under the bolt Q when moved by a thumb-piece in a recess in the under side of the carrier. The said device may, however, be omitted, as the carrier can be pressed down by the hand which rests on the cartridge in the act of pushing it into the magazine; and for taking cartridges out of the magazine without firing the guard-lever may be worked back and forth at less than full throw, while the gun is held to bring the opening into the receiver below, thus allowing the cartridges to drop out as they are brought up into the receiver from the magazine. Though said knee-joint, by resting on the carrier at Z^4, for bracing the joint at the moment of firing, causes the recoil force to be partly on it, another part thereof reacts by the link J′ to force the front end of the breech-bolt, and thereby the receiver-wall B, in the vertical direction, and the main part of said force, by means of the breech-brace H′, bears against the abutments B′, which tends to lift the receiver and the balance of the rear extension of the union-joint B out of its true position, thereby resisting these last parts of the recoil force. The obliquely-directed toe-pieces *h h* are so made that they, by their hold in corresponding recesses in the abutments H^3, may draw downward said extension by the rearward budging of the abutment B′ from the recoil.

The under side of the guard C′ is parallel with the axis of the breech-bolt C, and the lateral parallel flanges W^5, surmounting the crown of the carrier W, are adapted to bear against said under side of guard C′, the knock-off spring Z′ causing the carrier to rise. The moment the rounded point of the cartridge is leaving the exit of the magazine, and not before that time, the free end of carrier rises to bar the exit of the next cartridge from the magazine. The delivered cartridge thereafter is no longer impelled from the follower S^4, but lies passive on the carrier in partially-raised position until the breech-bolt is again advanced, and the guard-lever E′ raises the carrier fully to bring the free end of the carrier up, as shown in Fig. 2, the incline on the guard C′ taking upon it the butt of the cartridge into the position shown.

The trigger J, pivoted in the guard-lever E′, has its adjusting-stop *y* provided with the slender handle J^2, which is provided with the projection J^3, adapted to readily find its way into either of two receptacles, y^3, made therefor in the face of said lever diametrically opposite to each other and equally distant from the bearing of said stop. The object of said handle is to lock said stop in position, both when adjusted to hold said trigger in set or fixed position, when its nosing J^0 is projected, as shown, for automatically tripping the sear when said lever is brought home against the gun-stock, and also to hold said adjusting-stop locked when it is turned half-way around, or nearly, to liberate said trigger, that it may be tripped independently of said lever, or after said lever is home against the gun-stock. The handle, with its nib or projection J^3 locked in either of said countersunk receptacles, makes said stop a safety device, for otherwise the stop might be turned inadvertently to fire off the load when not desired.

The rear sight, *g′*, is not claimed as such.

I claim—

1. In a breech-loading fire-arm, the combination of the casing normally united with the stock and provided with an attaching-tenon on its front end, the front part of said casing being horizontally cut away on top about half its extent and having inside of it oblique undercut abutments at the rear end of the said cut-away part, and of the union-joint normally provided with the gun-barrel, which is screwed into its enlarged front end and having at its extreme rear end oblique toe-pieces for engaging said abutments, and having also in the rear end of said enlarged part a receptacle, in which said tenon is secured by a removable transverse pin or bolt for quickly breaking the gun thereat, substantially as herein set forth.

2. In a magazine fire-arm, the combination, with the breech-chamber containing the breeching mechánism and the firing mechanism, all connected in one section of gun, of the removable union-joint having one portion thereof adapted as the receiver, the recoil-abutments for the breech-brace end, and the recoil-abutment lock-down parts, all as one integral rearward extension, said joint having its remaining body constructed as a re-enforced combustion-chamber having the gun-barrel screwed into it and being provided with receptacles into which the magazine-tube and the fore-end are inserted below and attached to said barrel, and of the carrier mechanism adapted to work in both said assembled sections in conjunction with the breech-bolt and its operating-lever, substantially as set forth.

3. In a breech-loading fire-arm, the combination, with the rear section of the gun, composed of the breech-chamber casing attached to the stock, the safety mechanism for the hammer, sear, and guard-lever, of the removable front section of the gun, composed of the union-joint having the rear extension constituting, with the breech-chamber walls, the receiver, the recoil-abutments for the breech-brace, and the lock-down projections for en-

gaging said walls, and having the enlarged body at the front provided with the socket into which the gun-barrel is screwed and with receptacles into which the fore-end and the front end of said casing are secured, substantially as and for the purposes set forth.

4. In a breech-loading fire-arm, the combination, with the union-joint B, having as parts thereof the receiver A^2, ring section B^2, recoil-abutments B′ *h*, and body B^3, of the gun-barrel screwed into the latter, the breech-chamber casing having walls H^4 cut away above at their front ends to conform to the under side of the parts in the rear of the body of said joint and webbed together at the tenon L^2 thereon, the bolt Q, securing said tenon in the recess in said body, and the stock and barrel attached to said casing and joint, respectively, as set forth, all adapted for severance of the latter, as shown and described.

5. In a breech-loading fire-arm, the combination, with the union-joint B, having the gun-barrel A screwed into it and the fore-end K^2 secured to the barrel and abutted in a receptacle in said joint, of the rear extension, B, on said joint, composed of the sectional receiver A^2, the ring-section B^2, and the recoil-abutments B′, terminated in the rear with the oblique tenons *h*, of the breech-chamber walls H^4, cut away to conform to the under side of said extension, having at their united front ends tenon L^2, secured by bolt Q in the body of said joint, and having the abutments H^3 on the insides of said walls, adapted to receive said tenons thereunder, and of the breeching mechanism set forth, all co-operating to be sustained against the recoil force, substantially as set forth.

6. In a breech-loading fire-arm, the combination, with the union-joint B, having the gun-barrel A screwed into its body B^3, and the fore-end K^2 abutted in the receptacle in the same and secured to the barrel and having the rear extension composed of the receiver A^2, ring-section B^2, and abutments B′, all of the same bore, of the breech-bolt C, sleeved in said bore, and the removably-spliced breech-chamber casing having guide G thereon for said bolt, substantially as set forth.

7. In a magazine fire arm, the combination, with the union-joint B, having gun-barrel A screwed into its enlarged body B^3, and the magazine-tube K′, and the fore-end K^2 abutted into receptacles in the same and unitedly secured to said barrel, also having rear extension composed of receiver A^2, ring-section B^2, recoil-abutments B′, and tenons *h* at the rear end, of the breech-chamber walls H^4, having their upper edges cut away to conform to the under side of said extension and united at the attaching-tenon L^2, and provided on their insides with the recessed abutments H^3, the bolt Q, inserted through said joint and tenon entered in receptacle B^5, of the breech-bolt C, sleeved in said rear extension, and connected to favor its withdrawal rearward therefrom, of co-operating breech mechanism and pivoted carrier W, operating independent of said extension, as set forth.

8. In a breech-loading fire arm, the combination of the receiver-wall A^2, provided with the notch or score A′ inside of it, located rearward from the combustion-chamber fully the length of the cartridge used, and also provided with the orifice or aperture Y^4 in the opposite side of the receiver, the breech-bolt C, movable only axially in line with the gun-barrel and having fixedly attached to it the extractor spring-catch Y on the side next to said orifice, both for seizing the flange of the cartridge while extracting the same and for pressing it laterally to cause it to engage said notch, the fire-pin D, inserted longitudinally in the breech-bolt and provided with the vertical slot D^3 at an opening in said bolt, the link J′, pivoted to said bolt and provided with the projection O, for engaging the seat in said pin to free its point from the shell with certainty before the flange of the latter engages said notch, and mechanism for operating said bolt and link conjointly, as and for the purposes set forth.

9. In a breech-loading fire-arm, the combination, with the longitudinally-movable breech-bolt C, axially bored to form therein a shouldered receptacle for the firing-pin, and provided at its rear end with the extension C^4, and with the opening C^3 on its under side, of the firing-pin D, having diminished point D^2, and in the rear thereof the vertical taper hole or slot D^3 in its thicker portion, and also having the head D′ cut away below to adapt it to bear squarely on said extension C^4 and be guided thereby against turning, and of the link J′, pivoted to said bolt C and having thereon the projection O, adapted to register in said slot D′, and regulate thereby the position of firing-pin in said bolt, and of operating-lever E′, pivoted to work said link and bolt conjointly, substantially as and for the purposes set forth.

10. In a breech-loading fire-arm, the combination, with the longitudinally-movable breech-bolt C, provided with the extractor Y and with the extension C^4, also having axially through its body a tubular receptacle, of the fire-pin D, inserted in said receptacle and having its head D′ pillowed on said extension for keeping it from turning, and also having in its body the downwardly-widened slot D^3, of link J′, pivoted to an abutment at the front end of said bolt and provided with the projection O, which registers with said slot in the firing-pin and by contact regulates its position for extricating its point from the pierced shell, of the stop-notch A′ in the receiver-wall, arresting the withdrawal of the shell at a place in the receiver rearward from its position therein when said pin is extricated therefrom, and of the operating guard-lever E′, pivoted to said link and fulcrumed in the breech-chamber for moving said link and bolt, as and for the purposes set forth.

11. In a breech-loading fire-arm, the combination, with the breech-bolt longitudinally movable up to and back from the combustion-

chamber of the gun, of a cylindrical firing-pin reciprocating in the longitudinal bore in said bolt and guided so as not to turn in the same, and having vertical-taper slot or hole in its body, of a swinging pivoted link attached to the abutment on the under side of said bolt and provided with a projection on its upper side adapted to register in said hole or slot when the firing-pin is in its normal position for ejecting the shell, and operating to bring it to said position when it is stuck in the pierced shell, and of the shell-ejecting means, consisting in a spring-catch attached to the front end of said breech-bolt on the right side, and a stop-notch in the receiver-wall opposite to said catch when said bolt is retracted, and of mechanism for operating said link and bolt to perform said functions of extricating the firing-pin from the shell and ejecting the same successively, as and for the purposes set forth.

12. In a breech-loading fire-arm, the combination of the hammer T, provided with the angular notch T′ in its head, the sear N, having the offset-bearing R′, the bolt V, having the nose S, for engaging the hammer in said notch, and having the foot V^2, for engaging the sear while said bolt is advanced, and the spring X′, connected to said bolt for throwing it automatically to lock both the hammer and the sear when the gun is cocked and the staff of the rear sight is laid down, substantially as herein shown and described.

13. In a breech-loading fire-arm, the combination of the branched locking-bolt V, having the nose S, for engaging a notch or shoulder on the hammer T, and the foot V^2, for engaging the sear N, the spring X′, applied at its free end to said bolt for automatically throwing it forward and locking said parts, the detent g^2 on top of said bolt, and the pivoted lever or staff g, provided with the part n', acting as the ward of a key for withdrawing said bolt and unlocking the hammer and the sear when said staff is erected and stopped, as and for the purposes set forth.

14. In a breech-loading fire-arm, the combination, with the automatic spring-bolt set forth, having a part which engages a notch in the head of the hammer, and having another part which comes into position directly over the sear when said notch is engaged, of a pivoted latch having its longer arm coupled in action with said bolt by its working in a slot in the same, and having its shorter arm provided with a beveled hook, and of the strap of the guard-lever provided with a catch corresponding with and engaging said hook on said latch when said lever is pressed home against the gun-stock, substantially as shown and described.

15. In a breech-loading fire-arm, the combination, with hook-latch p, fulcrumed below its middle to the support r on the tang h^2, and arranged vertically in the stock K^4, of the spring lock-bar V, having the longer arm of said latch thereto for operating it and connecting its action therewith, and of the guard-lever E′, provided with the catch f, adapted to hook onto the hook p' on lower end of said latch by tripping it pressingly when safety-lock is on without undoing it in locking said lever, substantially as set forth.

16. In a breech-loading fire arm, the combination of the locking-bar V, actuated by the spring X′ to have longitudinal movement, and provided with the slot V^3 in its rear extension, the latch p, pivoted to the support r and having its longer arm inserted in said slot and provided with the terminal hook p' on the shorter arm working in the slot k in the lower attaching-tang, h^2, and the guard-lever e', provided with the catch f, adapted to reach into said slotted tang and be engaged by said hook for locking the lever automatically when pressed home against the stock, as set forth.

17. In a breech-loading fire-arm, the combination, with a hook-latch pivoted to the post on lower attaching-tang and extended vertically through the gun-stock, of the guard-lever provided with a hook-bearing stud adapted to stay the lever laterally and be engaged by the corresponding hook of said latch in a slot in said lower attaching-tang, of the breech-chamber, and of the hammer and sear lock-bar connected in action with upper arm of said latch and operating so that when said bar locks said hammer and sear it may also simultaneously interlock said latch and lever, as and for the purposes set forth.

18. In a magazine fire-arm, the combination, with the swinging carrier W, having recessed shank F^2, adapted to transversely fill the opening in the base of the breech-chamber, of the guard-lever E′, having body adapted at its fulcral part to fill transversely the recess in said shank, and of the bolt M, inserted in the breech-chamber walls H^4, through said shank of the carrier, pivoting it thereby in said opening, and inserted also through said lever, fulcrumed thereby in the same and working in said recessed shank, substantially as and for the purposes set forth.

19. In a magazine fire-arm, the combination, with the vertically-swinging carrier W, having its divided shank F^2, pivoted in breech-chamber by bolt M, which fulcrums therein also the guard-lever E′, and having the tenon W^0 on its free end and the cut-away part Z^4 near its middle, of the union-joint B, provided with receptacle B^5, adapted to sustain said tenon therein, so that the carrier, when fully depressed, shall serve as a recoil-brace to sustain thereon the knee-joint formed by the arm of said lever, in connection with the link J′, joining said lever to breech-bolt, as herein specified.

20. In a magazine fire-arm, the combination, with the carrier W and the guard-lever E′, unitedly hinged in the breech-chamber walls by the same fulcral bolt M, the fulcral part of lever working freely in the divided shank F^2 of the carrier during the greater part of its throw in operating the breech-bolt, of the abutment or part Z of the carrier joining the

sections of its shank together, the same serving as a hook at which said lever engages the carrier to raise its free end during the final part of the bolt-retracting throw of said lever, and of the knock-off spring Z′, attached rearward from the fulcrum of said lever to the breech-chamber casing, and adapted to engage the notch 2 on shank of the carrier, and thereby sustain it in raised position until the breech-bolt pushes it down, when it advances to breech the gun, substantially as and for the purposes set forth.

21. In a magazine fire-arm, the combination, with the carrier W, provided with the inclined way W^2 on its crown, and pivoted with and engaged by the guard-lever E′, as set forth, of the knock-off spring Z′, engaging notched shank of carrier, of the breech-bolt C, provided with the guard C′, adapted to bear with its front end, *t*, against the front cartridge while yet in the magazine, and during its transition therefrom for slowing its travel, until said front end steps off the crown of the carrier and permits it to rise a little to bar the exit of the next cartridge, and sustains against its front end the action of the spring-follower S^4, and of the bench W^3 on said guard C′, all co-operating as and for the purposes set forth.

22. In a magazine fire-arm, the combination, with the carrier W, having on it the inclined way W^2, and having its divided shank F^2 pivoted in the breech-chamber casing by the bolt M, whereon it swings vertically, and also having the undivided part Z of said shank, of the guard-lever E′, fulcrumed on said bolt M and working in said shank against said part Z, for raising the carrier during the final part of the lever's throw, of the knock-off spring Z′, attached to an abutment, L′, on inside of said casing in rear of said bolt, and engaging the notch 2 on the said shank, for sustaining said way elevated level with the bore of gun-barrel, and of the reciprocating breech-bolt C, provided with the guard C′, extended for taking the butt of cartridge onto the bench W^3 thereon the instant the point of cartridge has entered the bore of the barrel, the front end of said guard having meanwhile pushed down the carrier during the advance of the breech-bolt, substantially as shown and described.

23. In a magazine fire-arm, the combination of the breech-bolt C, reciprocating axially in line with the bore of gun-barrel and provided with the guard C′, traversing a less elevated path, the vertically-swinging carrier W, pivoted below the path of said guard and depressed by the same during said bolt's advance for bringing the way W^2 on the carrier in communication with the exit Q′ of the magazine, the knock-off spring Z′, arranged to engage the notch 1 on the shank of the carrier in manner to spring the free end of the carrier up a little the instant said guard has retreated therefrom, that said end may bar the exit of the next cartridge after one has been transferred onto said way on the carrier, and means for operating said bolt, substantially as and for the purposes set forth.

24. In a magazine fire-arm, the combination, with the vertically-swinging carrier W, having its shank pivoted in the breech-chamber and provided with notches 1 2, of the knock-off spring Z′, exerted by contact with said notched shank to raise the free end of the carrier, and of the slide-bolt W^4, arranged in said end and adapted to hold the same down by locking under the bolt Q, for the purpose set forth.

SAMUEL A. SULLENBERGER.

Witnesses:

H. S. REINHOLD,

D. C. MAURER.