(No Model.)

2 Sheets—Sheet 1.

J. LEEMANN.

MAGAZINE FIRE ARM.

No. 295,564. Patented Mar. 25, 1884.

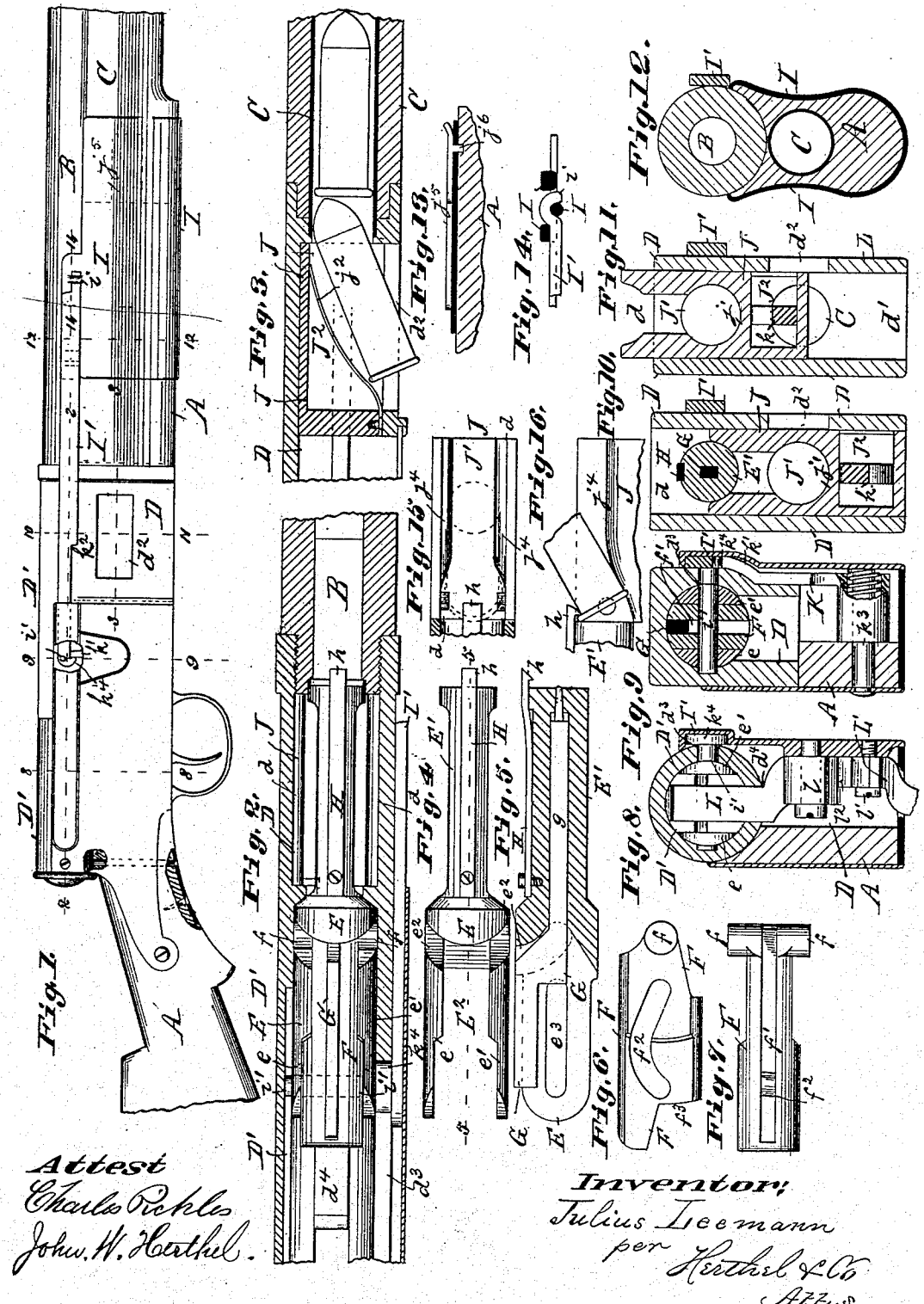


Fig. 7.

Fig. 1.

Fig. 2.

Fig. 3.

Fig. 4.

Fig. 5.

Fig. 6.

Fig. 7.

Fig. 8.

Fig. 9.

Fig. 10.

Fig. 11.

Fig. 12.

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(No Model.)

2 Sheets—Sheet 2.

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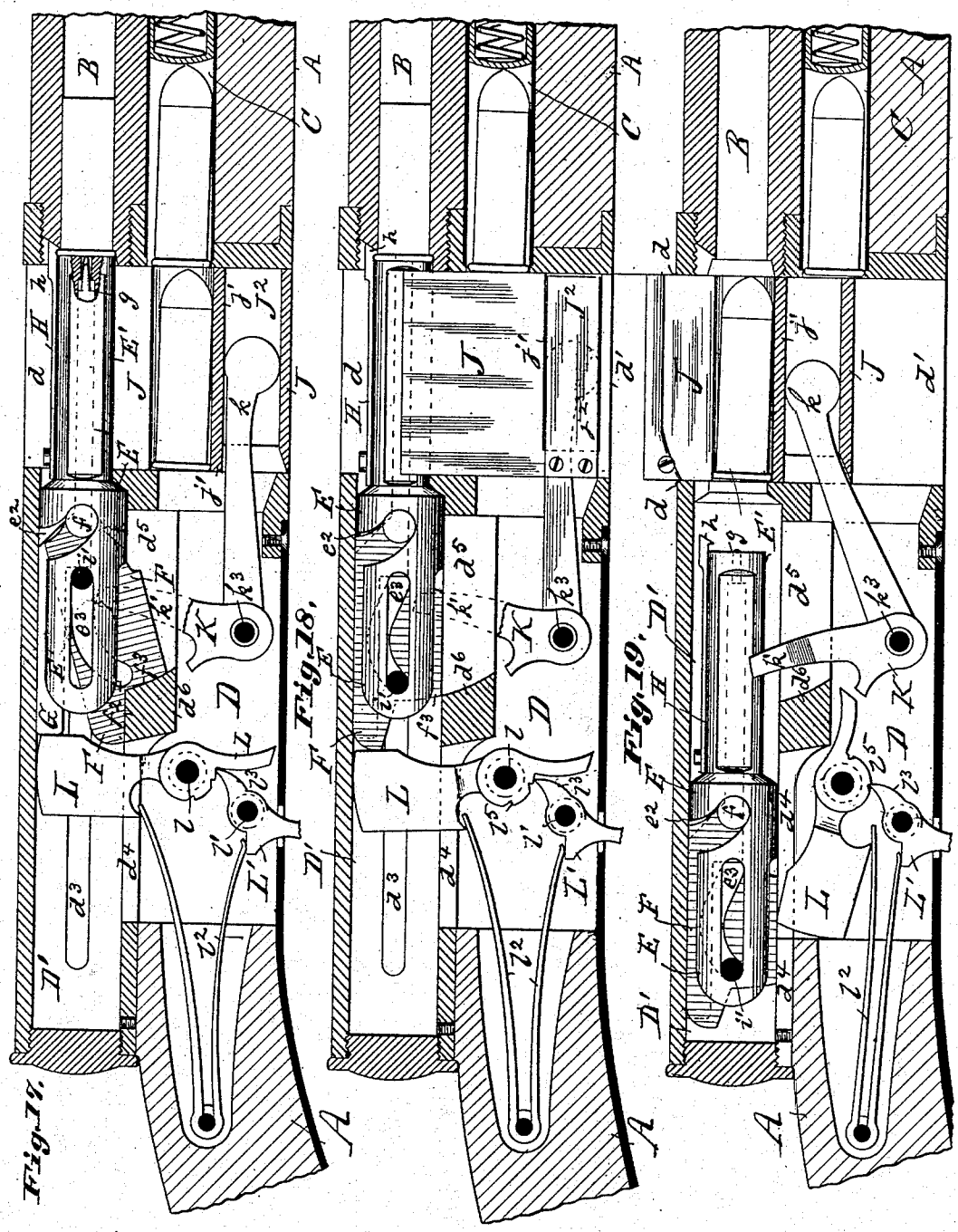


Fig. 18.

Fig. 18.

Fig. 19.

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UNITED STATES PATENT OFFICE.

JULIUS LEEMANN, OF ST. LOUIS, MISSOURI, ASSIGNOR OF ONE-HALF TO JOHN C. FISCHER, OF SAME PLACE.

MAGAZINE FIRE-ARM.

SPECIFICATION forming part of Letters Patent No. 295,564, dated March 25, 1884.

Application filed November 30, 1883. (No model.)

To all whom it may concern:

Be it known that I, JULIUS LEEMANN, a citizen of the Republic of Switzerland, and residing at St. Louis, in the State of Missouri, have invented a new and useful Improved Magazine Fire-Arm, of which the following is a specification.

The chief object of my invention is to effect with great rapidity the successive loading and firing of the arm without incurring the necessity on the part of the user to lower the gun from its proper position in which same is used when in the act of firing or discharging the arm.

The nature of my improvements relates to the reciprocation of a hand-slide along the stock of the gun, or, more specifically stated, to open and close the breech, insure the expulsion of the empty shell of the cartridge previously discharged, the elevation in line with the bore of the barrel of the cartridge for the succeeding discharge, the forcing home of such cartridge into its place in charging or loading the arm; also, to guard against and prevent premature discharge of the same, and otherwise render the breech mechanism or internal operating parts decisive, reliable, and safe for operation and use. I achieve these objects by the improved fire-arm illustrated in the accompanying drawings, in which—

Figure 1, Sheet I, is a side elevation of the fire-arm as the same appears ready for use, with parts broken away to better show detail parts. Fig. 2 is a plan section taken on line 2 2, showing more specially the breech-block and its parts, as the same are within the sub-barrel or hollow cylinder of the breech-chamber. Fig. 3 is a detail plan section taken on line 3 3, showing the manner of filling the magazine-barrel with cartridges. Fig. 4 is a plan view of the breech-block and its extractor. Fig. 5 is a vertical section of the same piece shown in Fig. 4 and taken on line 5 5. Fig. 6 is a side elevation of the lock-piece. Fig. 7 is a plan view of the same. Figs. 8, 9, and 10 are respective transverse or cross sections, taken on the same lines so marked in Fig. 1; also, Figs. 11 and 12 are cross-sectional elevations, the former figure showing the elevator fully raised, as having expelled the empty shell, &c. The latter figure shows the U-shaped hand-slide and its side bar for operating the breech mechanism. Fig. 13 shows the spring-detent to fasten the hand-slide (when not to be operated) to the side of the stock of the gun. Fig. 14 shows a plan view taken on line 14 14. (See Fig. 1 of the attachment of the hook end of the side bar to the U-shaped hand-slide.) Figs. 15 and 16 illustrate the inside and top portions of the elevator and manner of expelling the empty shell. Figs. 17, 18, 19, Sheet II, are respective longitudinal enlarged sections to show the main positions assumed by the breech mechanism when the hand-slide has been reciprocated. Fig. 17 therefore illustrates the breech-block in closed or locked position and the arm as ready for firing. Fig. 18 shows the same parts when the hand-slide has been partly moved back—viz., to open the breech or unlock the lock-piece preparatory to final withdrawal of the breech-block. Fig. 19 shows the position of the parts when the hand-slide has been completely drawn back, and preparatory to said breech mechanism being operated by the complete final forward thrust of the hand-slide and the parts made to assume the same positions started from and shown in Fig. 17.

A is the gun-stock. B is the firing-barrel. C is the magazine-barrel.

D represents the breech receiver or chamber in which the breech mechanism operates. The upper portion of the breech-chamber (marked D′) is made a hollow cylinder in line of communication with the firing-barrel. (See Figs. 1, 2, 8, 9, 10, 17, 18, 19.) It is within this hollow cylinder that the breech-block and its parts slide and reciprocate in a longitudinal direction, and as will hereinafter appear. The rectangular-shaped portion of the breech-chamber D has the top opening at *d*, and a similar opening, *d′*, at bottom. (See Figs. 2, 10, 11, 18, 19.) Through the bottom opening, *d′*, the elevator device is entered into its place in the breech-chamber D, and it is through the upper opening, *d*, that said elevator can protrude when it is raised, and out of which the empty shell of cartridge is thrown. The breech-chamber D has the further opening *d²* at the side. (See Figs. 1, 3, 10, 11.) It is through

said side opening that the cartridges are passed into the lower chamber of the elevator, preparatory to forcing said cartridges into the magazine-barrel. (See Fig. 3.) The hollow cylinder D′ has the longitudinal slot d^3, through which the projecting pin of the side bar passes to slide the breech-block backward and forward in said cylinder, (see Figs. 2, 8, 9, 17, 18;) also, the greater portion of the under side of said hollow cylinder D′ is open—viz., slotted at d^4 and d^5. Through the former the hammer can pass up within reach of the needle-bar and have sufficient space for operation. Through the latter opening the arm of the elbow-lever can pass and operate to raise or lower the elevator, as shown in Figs. 2, 8, 17, 18, 19. Between the slots d^4 d^5 is left solid metal, forming the shoulder d^6, against which the breech-block and its parts at the proper time of action can be kept locked, preventing recoil, &c. (See Figs. 17, 18, 19.)

E represents the breech-block. This, as a single piece, is made to be a plunger at E′, forming part of two arms or sides, e e', and these are slotted diagonally at e^2 and longitudinally at e^3, while between said side arms is left the large open space, (marked E^2,) all shown more clearly in Figs. 4, 5. The breech-block so made is fitted to receive the lock-piece F, and this has a pivotal action for purposes of locking and unlocking the breech-block. (See Figs. 2, 6, 7. 9, 17, 18, 19.) The lock-piece F, as a single piece, has the opposite projecting journals, (marked f f,) the longitudinal groove f', the curved slot at f^2, the shoulder at f^3, and otherwise its body is shaped as shown more clearly in Figs. 2, 6, 7, 9, 17, 18, 19. By its journals f f the lock-piece F is journaled in the diagonal slots of the breech-block. The groove f permits the proper seating and play or action of the needle-bar. Through the curved slot f^2 the projecting pin of the side bar passes, while the shoulder f^3 serves to lock the lock-piece against the shoulder of the breech-chamber. The lock-piece F, so made and journaled in the breech-block, has therefore two essential functions: first, at the proper time of action to drop or be partially turned downward to bring its shoulder against the shoulder of the breech-chamber and prevent the breech-block and its parts from recoiling; secondly, said lock-piece is operated to lift its shoulder out of engagement, or unlock the breech-block and permit same to be freely moved backward or forward, according to requirements. (See Figs. 2, 17, 18, 19.)

G is the needle-bar or percussion-stem. Its body is shaped so that its forward portion can pass through the bore g of the plunger, while the hindmost portion of the said stem fits loosely within the groove of the lock-piece F, and otherwise said percussion-stem is arranged to strike at all times, when driven forward, the center priming of the cartridge, as indicated in Figs. 2, 5, 10, 17, 18.

H is the extractor. This is attached to the top of the plunger, so as to bring the hook h to project and be capable of catching upon the flange of the cartridge-wheel, as shown in Figs. 4, 5, 15, 16, 17, 18. When the breech-block is moved back, the extractor, having hold of the cartridge, withdraws the same and facilitates its removal and final expulsion. (See Figs. 15, 16.)

I will now describe the hand-slide mechanism, by means whereof the breech-block can be reciprocated and its parts operated as above set forth; also, by means whereof the elevator can be raised or lowered, the hammer be "set" or "cocked," and otherwise the gun be loaded for firing, and when discharged reloaded without removing the gun, and as stated to be the nature of my invention.

I represents the hand slide. It is a U-shaped plate, fitted to slide along the stock or be reciprocated along same, and is shown in Figs. 1 and 12.

I′ is the stem or side bar connecting the hand-slide to the breech mechanism. (See Figs. 1, 2, 8, 9, 10, 11, 12.) The forward end of the side bar is hooked at i to the U-shaped hand-slide, (see Figs. 1. 14,) and the rear end of the side bar has a pin, i', projecting transversely through the longitudinal slot d^3 of the cylinder portion of the breech-chamber; also, through the respective side or longitudinal slots, e^3, of the breech-block, and through the curved slot f^2 of the lock-piece, as shown in Figs. 1, 2, 8, 9, 17, 18. 19. Hence by reciprocating the hand-slide the breech-block and its parts are reciprocated at same time. It will also be noted that the pin of the side bar, when made to travel the distance of the curved slot f^2 in the lock-piece, produces the "locking" or "unlocking" action of same, as indicated in Fig. 17, where the breech-block and its parts are shown locked, and in Fig. 18, where same is shown unlocked or free for movement; also, in operative connection with the sliding of the breech-block, side bar, and hand-slide is the elevator device that lifts the fresh cartridge in line of action between the plunger and the bore of the firing-barrel; also, at same time said elevator insures the expulsion of the previously-discharged cartridge. The elevator J is made to have two chambers, an upper chamber, J′, and lower chamber, J^2, subdivided from each other by the partition-wall j'. (See Figs. 10, 11, 17, 18, 19.) It is the upper chamber, J′, that receives the fresh cartridge, automatically fed from the magazine-barrel, while it is through the lower, J^2, that the cartridges are first introduced preparatory to forcing them successively to fill the magazine with the desired quantity of cartridges. Hence both the transverse sides of the elevator are left open, also the top of the upper chamber is left open, and out of which the expulsion of the empty shell takes place. (See Figs. 10, 11, 15, 16, 17, 18, 19.

To load the magazine-barrel with cartridges, these are first passed through the side openings, d^2, of the breech-chamber, and by pressing

back a spring, j^2, the cartridge is entered in the lower chamber of the elevator, thence forced into the magazine-barrel. (See Fig. 3.) The opening of the lower chamber of the elevator just referred to, when not in use in the supplying of the magazine with cartridges, is kept closed by the side spring, j^2, or pivoted plate. (See Figs. 3, 18.) The elevator is raised and lowered and performs its functions by means of the elbow-lever K, and which is operated by the sliding of the hand-slide. This elbow-lever K has two prominent arms at $k\,k'$, the former extending forward into the lower chamber of the elevator for purposes of raising and lowering the same. (See Figs. 10, 11, 17, 18, 19.) The arm k' projects upward in line of action, with the shoulder at k^2 on the side bar I', as shown in Fig. 1. (Also see Figs. 17, 18, 19.) The elbow-lever K, pivoted at k^3, and so related to the elevator and side bar of the hand-slide, when the latter is moved fully backward, it will be seen that the shoulder k^2 of the side bar strikes against the arm k', turns the elbow-lever to the left, causing its long arm k to lift the elevator, and thus the parts assume the position shown in Fig. 19, by which movement of parts the elevator lifts a fresh cartridge in line of the firing-barrel, and at same time expels or throws off the empty shell. When the hand-slide is moved forward, the side bar, by its shoulder at k^4, (or shoulder of its projecting pin,) (see Fig. 1,) strikes against the upper end of the arm k' of the elbow-lever and turns it back, and in doing so by its long arm forces down the elevator, and the parts assume their first positions. (Shown in Figs. 17, 18.)

In conjunction with the operation of the hand-slide and the backward-sliding action of the breech-block is the "cocking" of the hammer in manner following:

L is the hammer that strikes the needle-bar when the trigger L' is pulled in manner usual. The hammer and trigger are pivoted in operative relationship with each other, the former at l, the latter at l', with the usual spring, l^2, interposed, all shown in Figs. 8, 9, 17, 18, 19.

By referring to Figs. 17, 18 it will be seen that the upper end of the hammer abuts against the rear portion of the breech-block after the hammer has been made to strike the needle-bar or discharge the gun. Hence when the operator, by means of the hand-slide, forces the breech-block backward, this at the same time thrusts the hammer downward until a pawl, l^3, of the trigger engages with the notch at l^5 of the hammer and keeps the latter cocked, as shown in Fig. 19. No discharge of the gun can take place until the hammer has been so cocked, nor until the lock-piece locks the breech, or until the operator has pulled the hand-slide completely forward; then by a pull on the trigger the hammer can be made to strike the percussion-stem to discharge the gun.

The complete operation of my improved fire-arm is as follows: The operator, after every discharge, and while holding the gun in proper position, with one hand simply slides the hand-slide backward and forward preparatory to again discharging the gun by a pull on the trigger. In so pulling the hand-slide backward the pin i' of the side bar travels first the distance of the curved slot f, and unlocks the breech from the position shown in Fig. 17 to assume that shown in Fig. 18. On continuing this backward pull of the hand-slide, the breech-block parts, being forced also backward, carry or force the hammer back in order to cock it. At the same time the extractor withdraws the empty shell; next the shoulder k^2 of the side bar turns the elbow-lever to the left, causing it to raise the elevator J, which carries the fresh cartridge. The elevator while being raised has its shoulders or upper sides at j^4 brought under the cartridge-shell that the extractor has hold of, and lifts or forces out said empty shell, as indicated in Figs. 15, 16. Thus the full or complete backward motion of the hand-slide unlocks the breech, cocks the hammer, extracts and throws out the empty shell, and lifts a new cartridge in line of the bore of the firing-chamber. (See Fig. 19.) In pulling the hand-slide forward the breech-block slides forward, and by its plunger thrusts the new cartridge into the bore of the firing-barrel. Next the lock-piece is moved to lock the breech. Next the shoulder k^4 of the side bar strikes the elbow-lever to move the elevator J to descend. Thus the gun is loaded or charged by the full or complete forward sliding motion of the hand-slide. At this stage the operator can pull the trigger and discharge the gun. (See Fig. 17.) After every discharge of the arm the hand-slide is fully reciprocated for unloading and loading the gun. This done, it can be fired.

In Figs. 1 and 13 I show that one side of the U-shape hand-slide can have a spring detent, j^5, fitted by its lug j^6 to engage a mortise made in the side of the stock. By means of this spring-detent the said hand-slide can be kept fastened and prevented from moving.

What I claim as my invention is—

1. In a fire-arm, the combination, with the breech-chamber D and hollow cylinder D', having side slots, d^3, of the breech-block E, having side slots at e^3, the transverse pin i' on a side bar, I', connected to a hand-slide, I, fitted to reciprocate along the stock of the arm, by means whereof the said breech-block can be made to slide longitudinally backward and forward, substantially as and for the purposes set forth.

2. In a fire-arm, the combination, with the breech-chamber D, having shoulder at d^6, and hollow cylinder D', having side slot, d^3, of the breech-block E, consisting of side arms, $e\,e'$, having diagonal slots e^2 and opposite side slots, e^3, the lock-piece F, having journals f, curved slot at f^2, and shoulder at f^3, and the reciprocating hand-slide I, with its connecting mechanism, to operate the said breech-block and

lock-piece, in the manner and for the purposes set forth.

3. In a magazine fire-arm, the combination, with the breech-chamber D, hollow cylinder D′, having side slot, d^3, of the breech-block E, its plunger E′, carrying the extractor H, the said breech-block having opposite side slots, e^3, in which the transverse pin of the side bar, I′, connects the breech-block and its said parts to a hand-slide, I, fitted to reciprocate along the magazine, barrel, or stock of the gun, by means whereof, at the same time that the breech-block is moved backward, the extractor withdraws the empty shell of cartridge.

4. In a magazine fire-arm, the combination, with the breech-chamber D, having shoulder at d^6, hollow cylinder D′, having longitudinal slot d^3, of the breech-block E, forming part of which is the plunger E′, extractor H, said breech-block consisting of side arms, $e\,e'$, having diagonal slots at e^2, and opposite side slots, e^3, the lock-piece F, journaled in the breech-block and having the groove f', curved slot f^2, shoulder at f^3, the needle-bar G, the hammer and trigger, the elbow-lever and elevator, and the hand-slide mechanism, having shoulder at k^2, by means whereof the complete backward pull or motion imparted to said hand-slide unlocks the breech, cocks the hammer, extracts and throws out the empty shell of cartridge, and lifts a new cartridge in line of the bore of the firing-chamber.

5. In a magazine fire-arm, the combination, with the breech-chamber D, having shoulder at d^6, hollow cylinder D′, having longitudinal slot d^3, of the breech-block E, plunger E′, carrying the extractor H, said breech-block consisting of the side arms, $e\,e'$, having diagonal slots e^2 and opposite side slots, e^3, the lock-piece F, having journals f, curved slot f^2, shoulder at f^3, and groove f', in which the needle-bar or percussion-stem G is seated, its forward end extending through the bore of the plunger, the hammer and trigger, the elbow-lever and elevator, and the hand-slide mechanism, having the shoulder at k^4, by means whereof the complete forward motion imparted to said hand-slide moves the breech-block and its said parts forward, thrusts the previously-elevated cartridge into the bore of the firing-chamber, locks the breech, thrusts the elevator downward, and loads the arm preparatory to its being fired or discharged.

6. In a magazine fire-arm having breech-chambers D D′, with longitudinal slots d^3, shoulder at d^6, the combination of the longitudinally-moving breech-block and plunger E E′, the former consisting of the side arms, $e\,e'$, having diagonal slots e^2 and opposite side slots, e^3, its lock-piece F, having journals f, groove f', curved slot f^2, and shoulder at f^3, the needle bar or stem G, with extractor H, said parts arranged within and carried by said moving breech-block, the U-shaped hand-slide capable of reciprocation, and connected by its side bar, I′, and transverse pin i', to said moving breech-block and its parts, the side bar of hand-slide further having shoulders at $k^4\,k^2$, in operative relationship to the elbow-lever K, having arms $k\,k'$, the elevator J, having subdivided chambers J′ J², and the further hammer and trigger parts, all operating substantially as described.

In testimony of said invention I have hereunto set my hand.

JULIUS LEEMANN.

Witnesses:

WILLIAM W. HERTHEL,

JOHN CASPER FISCHER.