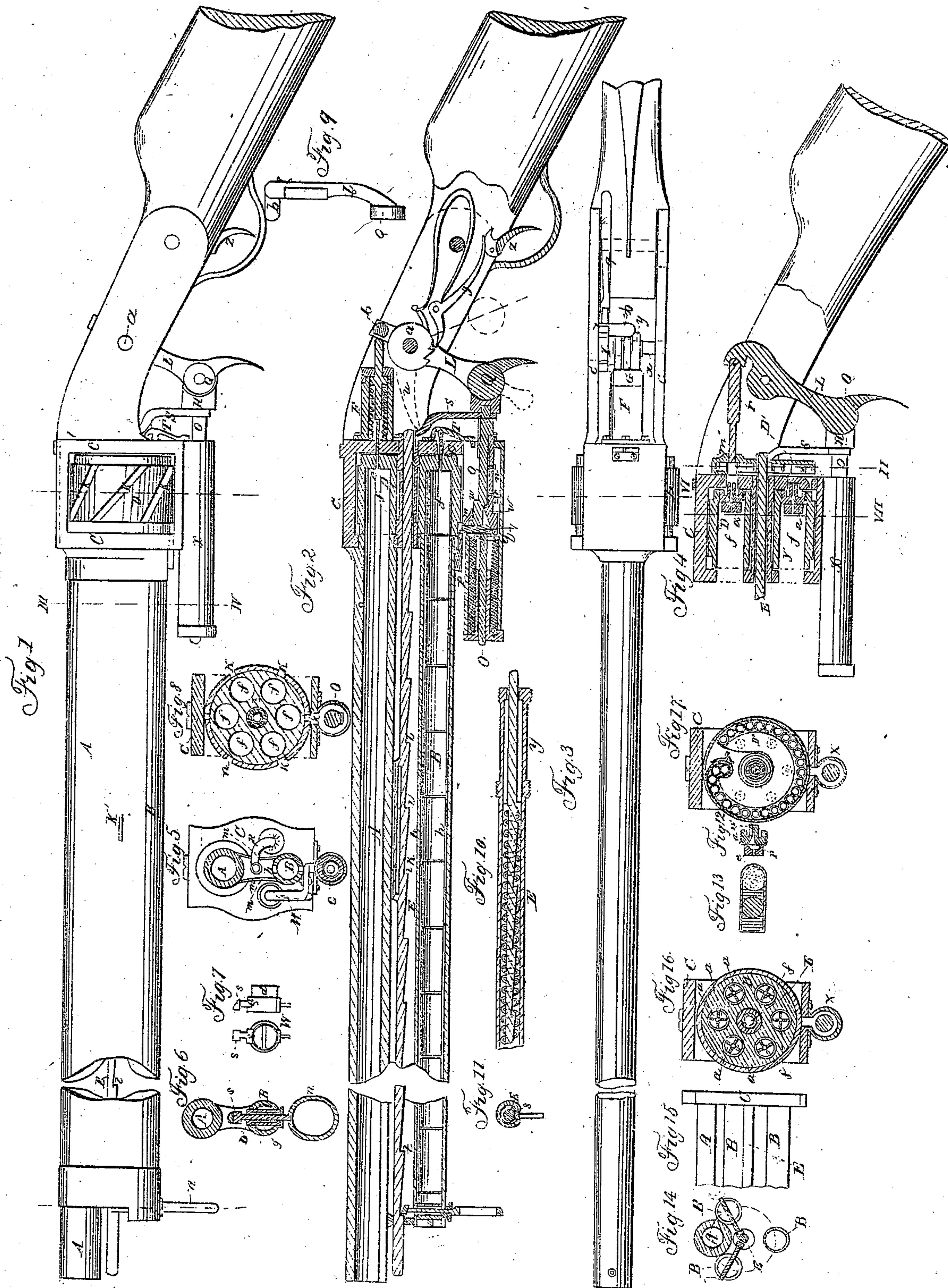


E. LINDNER.
Magazine Fire-Arm.

No. 11,197.

Patented June 27, 1854.



UNITED STATES PATENT OFFICE.

EDWARD LINDNER, OF NEW YORK, N. Y.

IMPROVED MAGAZINE, REPEATING, AND NEEDLE GUN.

Specification forming part of Letters Patent No. 11,197, dated June 27, 1854.

To all whom it may concern:

Be it known that I, EDWARD LINDNER, of the city of New York, in the county and State of New York, have invented a new and useful Self-Loading Gun; and I do hereby declare that the following is a full and exact description of the construction and operation of the same, reference being had to the accompanying drawings, making part of this specification, and to the letters of reference marked thereon.

Figure 1 is an outside view of the gun adapted with the darting-needle (*zund nadel*) lock. Fig. 2 is a longitudinal section of the same. Fig. 3 is a top view of the same. Fig. 4 is a longitudinal section of part of the gun adapted with the percussion-caps lock.

The remaining figures are views and sections of different parts thereof, and will be more particularly mentioned in the following description.

The nature of my invention consists in placing below the gun-barrel a peculiarly constructed barrel, to contain from forty to fifty cartridges, which said cartridges load themselves into a revolving breech-piece by means of a piston pressing against the cartridges, said piston being worked by a rack, and which rack is worked by the cocking and discharging of the gun.

By this self-loading apparatus I am enabled to fire off, in quick succession, one cartridge after the other, without taking the gun from the shoulder, until the whole amount of charges originally filled into the cartridge-barrel are discharged.

A is the barrel of the gun, screwed into the frame C, which said frame has two side plates or projections, *c c*, by which the whole is securely fastened to the wooden butt-end of the gun.

B is the cartridge-barrel, which is likewise screwed into the frame C. This barrel is made very light, and has two slots, *h h*, Figs. 2 and 5, one at the upper and one at the lower side, running very nearly the whole length, and in which slots a piston, W, is guided, while the same is made to press (if the barrel is filled with cartridges) against the cartridges. This barrel B and the barrel of the gun A are connected together by two side plates, *m m*, Fig. 5, but attached to the same in such a manner that the rack E and the projections

of the piston W can move freely between the same. At the fore end a guide, *p*, for the rack E is fastened between those side plates.

E is a rack, made round at each end. At the fore end it is guided in the piece *p*, as above described, and at the back end it passes through the center-piece Y, screwed into the frame C, and guided thereby. Besides those guides at both ends, a long slot, K, is made about the center of the rack, Fig. 2, into which a steel key, K', Figs. 1 and 2, is fitted, so as to allow it to slide easily and act as a guide in that part. On the lower side of this rack teeth *l l* are cut the whole length, exactly the same distance one from the other as the length of one cartridge, and are likewise of the same number as the number of cartridges which can be put into the barrel B. At the after end of the rack an arm, S, is firmly attached, and connected with a rod, O, as will be hereinafter described.

W is a piston, which slides in the barrel B, Fig. 2, and shown in side view and section, Figs. 6 and 7. The forward part, *d*, is made round, and the after part, *g*, is made square and projecting, and fitted to slide easily in the slots *h h* of the barrel B. Through this square part *g* the pin *o* passes, the upper end, *s*, of which is so shaped as to fit into the teeth of the rack; and at the lower end a thumb-ring, *n*, is fastened on to facilitate taking the piston out of the barrel. This square part *g* is bored out sufficiently large to admit of a spiral spring round the pin *o*, so as to make the latter always bear against the face of the rack E.

D is a cylindrical revolving breech-piece, exactly fitted and ground into the frame C, and turns upon the center-piece or arbor Y. This breech-piece contains six chambers, *f f*, as shown in Figs. 8 and 2 in end view and section. These chambers are only part of the way bored in, and about the length of the cartridges, and if, as in Figs. 1, 2, 3, the gun is made with the darting needle (*zund nadel*) lock, only a small hole, *e*, is drilled through, to allow the needle to enter freely, and to serve at the same time to lock this breech-piece firmly to the frame, as will be hereinafter described.

T is the lock-spring, fastened near the middle of the frame C, Fig. 2, having a pin, *e'*,

attached to it, which, after passing through a corresponding hole in the frame C, enters one of the holes *e* in the breech-piece D, thereby locking the breech-piece firmly to the frame C, for the purpose of insuring that the charges shall be in a line with the gun-barrel before the firing takes place, and an empty hole opposite the cartridge-barrel to receive a fresh charge. The lock-spring is thrown out of this position by a projection, *w*, attached to the rod O, when it is required to turn the breech-piece.

X is a tube or box fast on the lower side of the frame C, or screwed on, as shown in Figs. 1 and 2, which contains the rod O, provided with the spiral spring P, and which rod I shall call the "spring-rod." The spring-rod has a collar, *q*, forged on, against which the spiral spring P bears. This collar is bored through to receive the pin V, by which the breech-piece D is turned. This pin V rests upon a sliding piece, U, which is fastened to the under side of the spring-rod O in such a manner as to allow the same to slide backward and forward, but at the same time to go with the spring-rod when the latter is moved. The sliding piece U has two projections, *r* and *u*, so placed that while the same is carried along with the spring-rod O it will be stopped at the proper place by coming in contact with the back end of the tube X, while the spring-rod finishes its motion. Where the pin V rests upon the sliding piece U the same is made tapering or wedge-shaped, by which means the pin V will be raised or depressed. To insure always a fair bearing of the pin V against the proper surface of the wedge-shaped part of the sliding piece U, this pin is provided with a small spring, *m'*. The spring-rod O receives its guide in the tube X. At the backward end is the head H, screwed on the spring-rod, which fastens likewise the arm S to this spring-rod, through which said arm S its motion is communicated to the rack E. The head H rests against the lower rounded part, Q, of the hammer L. On the upper side of the spring-rod O is the projection *w*, which acts upon the lock-spring T, as before described.

On the outside of the breech-piece D are six grooves, *k k k*, Figs. 1 and 8, turned on spirally, and in which the pin V is made to work, and turn thereby the breech-piece by every movement one-sixth part round, by which operation a charged hole is each time brought in a line with the gun-barrel and an empty hole or chamber opposite the cartridge-barrel.

The revolving breech-piece D is turned on each side a little down flush with the bottom of the grooves *k*, on which the pin V rises up to the next groove after having turned the breech-piece one-sixth part round.

When the spring-rod O is relieved by the lower part, Q, of the hammer L, it is forced out by the action of the spiral spring P, and moves through the connecting-arms S the rack E backward, by which means the piston W is likewise brought back, pushing one cartridge

into one of the empty chambers of the breech-piece, as this motion is just equal to the length of one cartridge.

When the rack is again moved forward the inclined plane, going from one tooth *l* in the rack to the other tooth, forces the pin *o* of the piston W down, allowing thereby the rack to slide over it and to its first position, while the piston remains stationary, when the upper end, *s*, of the pin *o* falls in the following tooth, ready for the next action.

Fig. 5 is a section through the line III and IV, showing the front face of the frame C, with the arrangement of the ramming-hammer and cleaning-brush.

M is the ramming-hammer, fastened on the front side of the frame C, so arranged as to come opposite one of the chambers *f* of the breech-piece D, which said chamber, after having first received a charge from the cartridge-barrel, as above described, is brought opposite to it, when the charge is, by the action of this hammer, brought home.

The ramming-hammer is acted upon through its arm *x* by the pin V after said pin has first fulfilled its action of turning the breech-piece D one-sixth part round. Between the hammer M and the face of the frame is a small spring, to force the hammer out of the chamber *f* as soon as the arm *x* is relieved from the action of the pin V.

R is the cleaning-brush, situated on the opposite side of the ramming-hammer, and so arranged as to come likewise opposite one of the chambers *f*, and connected with the rack E, receiving therefrom a forward-and-backward motion, thereby cleaning the chambers alternately as they are brought round after having been discharged. In Figs. 1, 2, and 3, where the gun is represented with the darting needle (*zund nadel*) lock, the darting needle, hammer, spring, &c., are situated between the side plates *c c* of the frame C.

F is a box screwed on the back of the frame C in a line with the gun-barrel A, containing the needle-carrier G with the darting needle. A coiled spring abuts against the forward end of a collar fast on the needle-carrier G, Fig. 2, and abutting with its back end against the frame C, by which the needle is always kept and forced out of the revolving breech-piece, except when pressed in by the hammer to pierce the bottom of the cartridge and ignite the same by a friction combustible priming. The needle-carrier G acts at the same time as a guide for the needle.

L is the hammer, turning on the pin *a* fast in the side plates, *c c*. This hammer is provided with stops or catches in connection with the trigger and spring, &c., in the usual way.

The upper end of the hammer L, which has to press the needle-carrier into the charge, is made with a joint, Fig. 9, to allow the top end, *b*, to lift up after having pressed in sufficiently far the needle-carrier, and ignited thereby the cartridge, so as to enable a quick

backward motion of the needle-carrier, and allowing the same to pass under this top end, *b*, of the hammer. At the side of the hammer *L* is a small spring, *t*, pressing against the joint of the piece *b*, and forcing the same back again into its proper place when the hammer is cocked.

z, Fig. 3 is a piece fastened against the side of the plates *c c*, having an inclined surface, upon which one side of the hammer-top *b* rests, by which the same is thrown up at the proper moment to give the needle-carrier liberty to be forced, by the action of its spring, quick out of the charge and to pass under the hammer-top *b*, as above described.

By the present arrangement of the Prussian needle-gun, the needle is secured to a small fly-spring carrier acted upon by a spring, which said carrier is disengaged by drawing the trigger of the gun, when the spring darts the needle into the cartridge to effect the discharge. During the whole time of the discharge the needle remains in the gun, and is therefore subjected to be heated to such a degree as to be detrimental to the same.

In my arrangement the needle is acted upon by the upper part of a hammer constructed in such a manner that, after the same has pressed the needle sufficiently far into the cartridge to inflame the priming, said upper part of the hammer is suddenly thrown up, thereby setting the needle at liberty, when said needle is, by the action of a spring, quickly forced out of the cartridge and allowed to pass under said upper part of the hammer, by which quick-returning motion any heating of the needle is effectually prevented.

The action of the gun is as follows:

After the cartridge-barrel *B* has been filled with cartridges, the piston *W* is put in, with the cylindrical part inward, and the upper end, *s*, of the same will then fit in one of the teeth *l* of the rack *E*. Then move the rack three times backward and forward, when the revolving breech-piece *D* will have been charged in four chambers, and the gun is ready to discharge. Now pull the trigger *Z*, when the hammer will be set at liberty, pressing the needle into the charge and igniting the same, thereby discharging the gun. By this action the spring *P* forces the spiral rod *O* outward, taking with it the rack *E*, through the connecting-arm *S*, whereby the piston *W* is pressed against the cartridges, and, having moved just the length of one cartridge, has pushed one of the same into an empty chamber of the breech-piece *D*. By this motion of the rack *E*, the cleaning-brush *R* has entered one of the former-discharged chambers in the breech-piece, ready to sweep the same out by the next motion. The lock-spring *T* has been thrown out of gear by the stop or projection *w* on the spiral rod *O*, as before described, leaving the breech-piece *D* thereby at liberty to be turned round by the next movement. The pin *V* has likewise left the arm *x*, whereby the ramming-hammer *M* has come out of

the chamber of the breech-piece *D*. Now press the lower part of the hammer *L* from you until the piece *y* (in connection with the trigger *Z*) abuts against the stop or catches, when the hammer will be whole-cocked and ready to fire off again. By this action of cocking the spring *P* of the spiral rod *O* has been compressed, the spiral rod pressed in, and therefore, through the connecting-arm *S*, the rack *E* moved forward, bringing the piston *W* in connection with the next tooth in said rack. The pin *V* in the spiral rod *O* has passed through one of the spiral slots *k* on the outside of the revolving breech-piece *D*, thereby turning the same one-sixth round. A chamber containing a fresh charge is hereby brought opposite the gun-barrel and an empty chamber in a line with the cartridge-barrel. The lock-spring *T* has likewise been set at liberty, and the pin *e'* has entered one of the center-holes *e* of the breech-piece *D*, locking thereby firmly the latter to the frame *C*. The cleaning-brush *R* has, by the rack *E*, been drawn out of the chamber in the breech-piece, and thereby cleaned the same ready for a new charge. The pin *V*, after having turned the breech-piece *D*, acts now upon the arm *x* of the ramming-hammer *M*, and presses the latter thereby on the cartridge, by which the same is brought home. If, now, the trigger *Z* is pulled again, the gun will be discharged a second time, and the whole above-described action repeated; and this, it will be perceived, can be performed in as quick succession as may be desired, and as long as any cartridges remain in the barrel *B*.

When the cartridge-barrel *B* is empty, then pull the thumb-ring *n*, thereby bringing the top end, *s*, clear of the teeth *l* in the rack *E*, when the piston *W* may be slid out of the cartridge-barrel *B* and the same filled again with cartridges, and proceed as above described.

Should it be required to take any of the charges out of the chambers of the revolving breech-piece *D*, the same can be done by disengaging either the ramming-hammer *M* or the sweeping-brush *R*.

Instead of the lower box or tube, *X*, which contains the spring-rod *O* with spring, the sliding piece, &c., the same may be taken away and changed by placing the spring directly round the rack *E*, as represented in Figs. 10 and 11.

The revolving breech-piece *D* has, in that case, six spiral grooves cut on the inside of its center hole. The pin *V*, to work in those grooves, turning thereby the breech-piece, is then attached to the rack *E*. A slot is made in the center-piece *Y*, to allow the pin *V* to pass through the same. The rack *E* is, in that case, acted on by a projection, *u*, (shown in dotted lines in Fig. 2,) fast on the hammer *L*.

Instead of the rack *E*, a screw with a very coarse pitch may be used, running the whole length of the barrels, and situated in the same place as the rack *E* at present, having, instead

of the connecting-arm S, gearing which will be moved by the hammer L when the gun is fired off. The piston W is, in that case, worked by this screw. The advantage of this is principally that while by the use of the rack the cartridges must all be of equal length, in this arrangement I can increase or diminish the amount of motion of the piston W so as to suit the length of the cartridges.

In Fig. 4, which represents a part of the gun as adapted to Percussion-caps, the feeding or self-charging arrangement remains the same as above described.

The revolving breech-piece D has here six plugs, *a' a' a'*, screwed in the back behind the chambers *f f*, a section of which is again shown in Fig. 12. The plugs are provided with nipples *n'*, to receive the percussion-caps, and on the inside are small knives *o'*, or their equivalents, to pierce the bottom of the charges when brought home by the ramming-hammer M, as above described, so as to allow the powder to enter the touch-hole *p'* in the center of the plugs. The knives *o'* are placed diagonally across the inside surface of the plugs, and are hollowed out, as shown on the drawings, Fig. 12, to give free access to the touch-hole and allow the powder, after the knives have pierced the bottom of the cartridges, to enter freely the touch-hole or channel *p'* in the plugs. The nipples *n'* have small springs round them, to throw off the percussion-caps after the same have been fired off and are relieved from the hammer.

D' is a box screwed to the back of the frame C, to hold the percussion-caps, and provided with springs in such a manner that, by the action of the same, one cap is pressed through a corresponding hole in the back of the frame C on the nipple *n'* as it is brought opposite the hole. A projection, *m''*, is likewise made on this box, to act as guide for the toggle *r'* of the hammer L in its action upon the cap.

L is the hammer, provided with a toggle, *r'*, capable of a slight motion, and guided, as above described, in the projection *m''*, to insure always a horizontal motion, thereby pressing fair against the percussion-cap while firing the same off.

To facilitate the opening or piercing process of the cartridges by the knives in these self-loading percussion-cap guns, I make my cartridges, as represented in Fig. 13, by covering the bottom end of the same, instead of, as at present, with paper, with a thin skin or its equivalent, which, through its stiffness and hardness, is easily pierced.

The action of this gun is in every particular exactly the same as above described.

For fortifications, or where the gun can be rested upon anything, the same may be made with three or more cartridge-barrels, as repre-

sented in Figs. 14 and 15, where C is a part of the frame into which the gun-barrel A is screwed, as well as the cartridge-barrels B.

E represents the rack. *o o* are the pins passing through the piston W, which slide in the barrels B, pressing against the cartridges, as above described.

To use this arrangement of gun, turn the rack E so that there will be a connection with the piston of one of the cartridge-barrels, and shoot as often as there are charges in the same; then turn the rack E round, so as to come in action with another piston of another barrel, and so on until they are all empty. By this means from two hundred to two hundred and fifty charges may be fired out of this one barrel in quick succession, and in a very short time, according to the number of cartridge-barrels.

Fig. 16 is a section through the line VI and VII of Fig. 4, showing the position of the knives *o'* on the plugs *a'* in the bottom of the chambers. Fig. 17 is a section through the line I and II of Fig. 4, showing the percussion-cap box and its inner arrangement.

1. I do not claim the barrel B containing the charges, but I claim the application of the rack E, situated between the gun-barrel A and the cartridge-barrel B, and the construction of the piston W, in connection with said rack, for the purpose of pressing the cartridges into the revolving breech-piece, substantially as described.

2. I do not claim the needle for the purpose of igniting the priming, but I claim the spiral spring round the needle, together with the toggle-joint at the upper end of the hammer L, constructed as set forth, and acting upon the needle in such a manner that, after said toggle-joint has pressed the needle sufficiently far into the cartridge to ignite the priming, said toggle-joint is forced upward, allowing thereby the needle to spring suddenly back and pass under the toggle-joint, by the action of the above-mentioned spring, and by which quick-returning motion any heating of the needle is prevented.

3. I do not claim the revolving breech-piece with spiral grooves on the outside circumference, but I claim the arrangement and manner of working the pin V, by which the revolving breech-piece is made to turn substantially as described.

4. I claim covering the bottom of the cartridges with a thin skin to facilitate the piercing process of the same.

5. I claim the ramming-hammer M, worked in the manner and for the purpose herein set forth.

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Witnesses:

HENRY E. ROEDER,
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