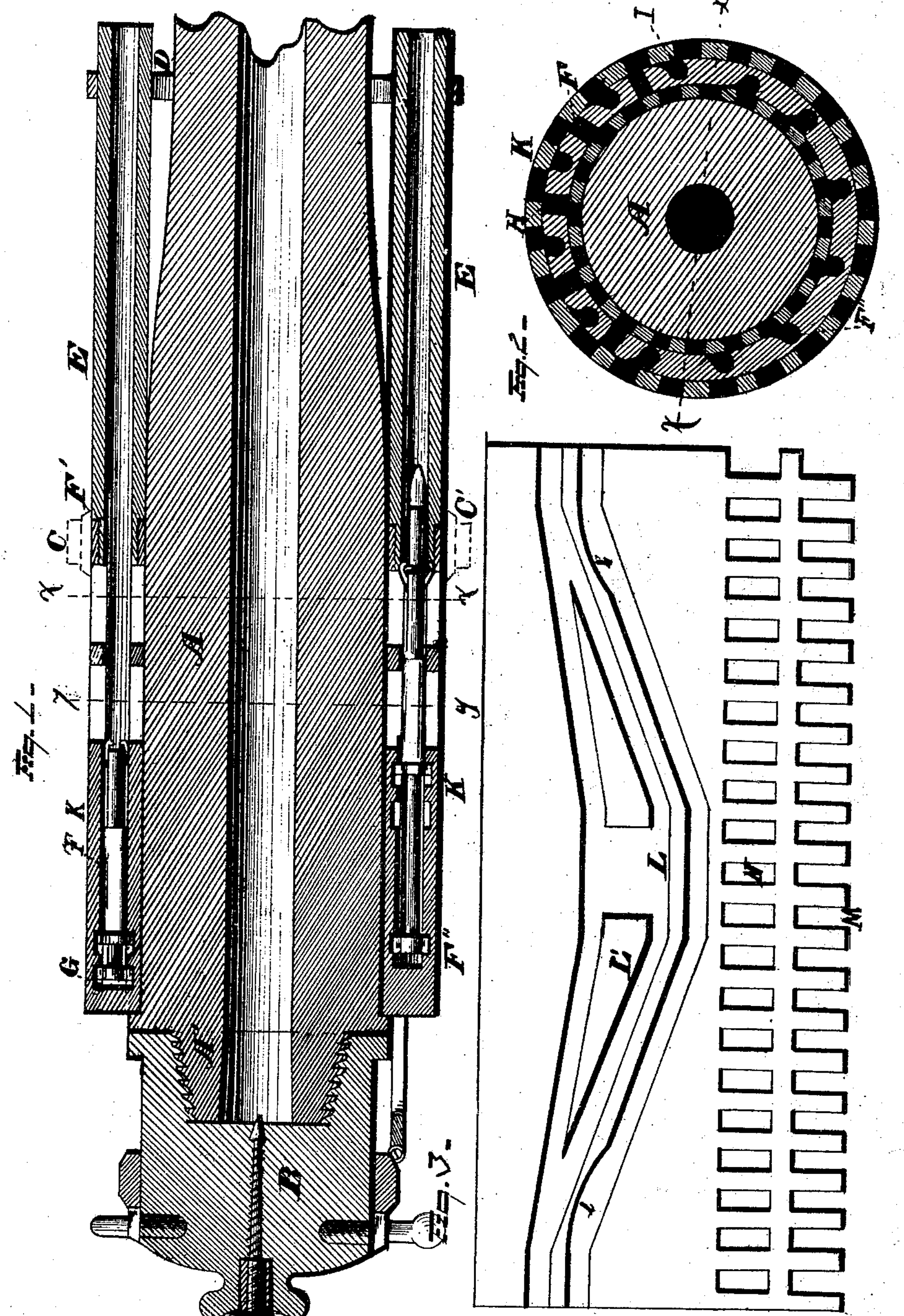
2 Sheets—Sheet 1.

A. E. MILTIMORE.

BATTERY GUN.

No. 181,093. Patented Aug. 15, 1876.



WITNESSES

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2 Sheets—Sheet 2.

A. E. MILTIMORE.

BATTERY GUN.

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Fig. 4.

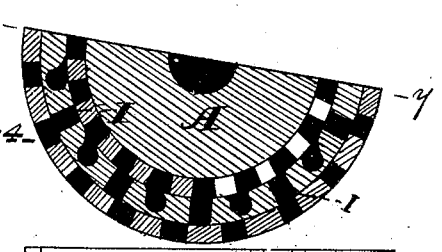


Fig. 5.

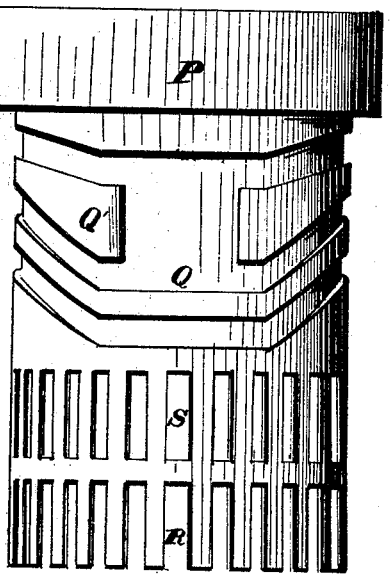


Fig. 6.

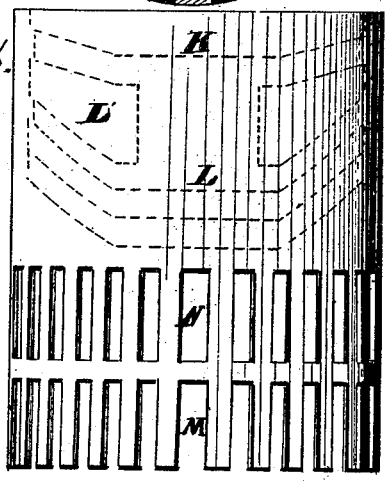


Fig. 7.

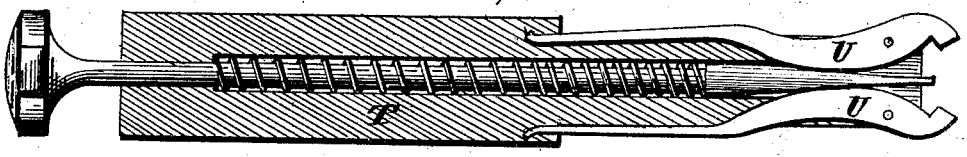
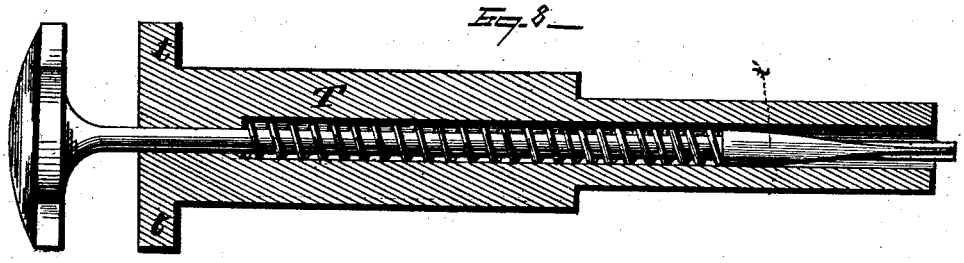


Fig. 8.



WITNESSES

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UNITED STATES PATENT OFFICE.

ALONZO E. MILTIMORE, OF UNITED STATES ARMY.

IMPROVEMENT IN BATTERY-GUNS.

Specification forming part of Letters Patent No. **181,093**, dated August 15, 1876; application filed January 4, 1875.

To all whom it may concern:

Be it known that I, ALONZO E. MILTIMORE, of United States Army, have invented certain new and useful Improvements in Battery-Guns; 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 pertains to make and use it, reference being had to the accompanying drawings, which form part of this specification.

My invention relates to battery-guns; and consists, first, in the combination, with a central gun of large caliber, of a series of smaller stationary guns, whereby accurate long range can be united in the same artillery piece with sharp execution work at a short distance; second, in the combination, with a gun provided with a conical screw-tapped breech, of a corresponding cap or breech-piece, whereby a slight revolution of the latter engages or disengages same with the gun; third, in the combination, with a stationary lock-cylinder, of a revolving cartridge-cylinder, under which construction the gun is operated much easier, and with less friction of heavy parts, than has heretofore been the case; fourth, in the combination, with a stationary lock-cylinder and lock, of a cartridge-cylinder, constructed with cams or grooves, which cause the lock to feed the cartridge in place in its appropriate gun-barrel, explode the same, then withdraw the empty shell, and finally eject same from the lock-cylinder; fifth, in the combination, with a hollow lock-cylinder and lock, of two independent hollow cartridge-cylinders, revolving, respectively, without and within said lock-cylinder, and operating the gun by means of a double reversible spiral cam, located upon inner and outer face, respectively, of each of same; sixth, in the combination, with a firing-pin, of a spring-extractor, so constructed that the same releases the exploded shell upon its withdrawal from the firing-barrel by a mere retraction of the pin within its case. My invention further consists of such parts, combinations, and devices as are further described, and finally claimed.

Referring to the drawings, Figure 1 is a central horizontal longitudinal section, showing cartridges in the smaller barrels in different stages of the operation of the gun; Fig. 2, a vertical cross-section through line *x x* of Fig. 1, showing the parts as constructed to receive the cartridge; Fig. 3, a plan view of a semi-section of the cartridge-cylinder represented as being in a straight plane. Fig. 4 is the lower semi-cross-section of the lock and cartridge cylinders through line *y y* of Fig. 1, showing the same as adapted to eject the exploded shell. Fig. 5 is a side elevation of the inner cartridge-cylinder with its exterior cams. Fig. 6 is a similar view of the outer cartridge-cylinder, having its interior cams shown in dotted lines. Figs. 7 and 8 are longitudinal vertical sections of the firing lock and pin in planes, respectively right angular to one another.

It will be understood that any appropriate carriage or other support may be used in sustaining my improved gun; and hence I only show and describe the parts which intimately enter into my invention. I also desire myself to be understood as not limiting the use of the series of small stationary guns operated by the revolving cartridge cylinder or cylinders to their connection with the heavy central gun, since the latter may be dispensed with entire, and any suitable axial support substituted for same, such axis, in this latter case, serving simply as a material center piece or shaft for sustaining and maintaining the operating small guns in their action.

It is further apparent that the central heavy gun may be of any bore, smooth or rifled, and capable of loading at breech or muzzle, while, however, my following description will treat the same as being a breech-loader, and discharged by a firing-pin located in the countersunk breech-piece.

The letters of reference in the drawings are as follows: A is the central gun, of heavy caliber, about which cluster the smaller barrels. It is constructed with a breech-bore of slightly-enlarged dimensions at its extreme rear, so as to allow of the easy introduction of the unexploded shell, and the withdrawal of the heated discharged shell. A′ is the breech of the gun of a coniform construction, which is screw-tapped by a thread of such proportion relative to the inclined plane of said conical breech that the breech piece or cap B, correspondingly fitting over same, may be snugly se-

cured to the gun by a slight revolution of itself, such as a semi-turn, more or less. It is apparent the cap is also readily removable from the gun by a corresponding turn in the opposite direction. Located within the countersunk rear end of breech-cap B is the firing-pin for discharging said main gun, and is preferably of same construction as the firing-pins used in operating the smaller guns. Secured to the main gun at its central point of equilibrium are the trunnions C C′, serving to maintain the gun in proper position, while the smaller barrels are inclosed at their forward portions by a collar, D, securely binding same together and retaining them in correct relative position to themselves and their inclosed axial support. E represents the several smaller barrels, whose rear extremities are firmly secured to the front face of the flange F′ formed on the forward periphery of the lock-cylinder F. This hollow lock-cylinder or sleeve F is constructed with grooves G extending the length of the cylinder, and of concave construction, so as to form ways or guides for supporting and carrying the reciprocating lock. The several gun-barrels connect with these grooves by their perforated breech-shanks passing through circular slots in the flange F′, and thus immediately bringing the several barrels into open connection with such lock-carrying grooves.

Just back of the flange F′ and intermediate the several grooves G are slots H formed in the upper portion of the cylinder F, the purpose of which is to allow the passage of a cartridge from the hopper-case into the carrying-slots of the inner cartridge-cylinder, whence the cartridge is delivered into the grooves F″, formed in the lower portion of the lock-cylinder.

I are slots formed in the lower portion of the lock-cylinder, intermediate, and to the rear of, the lower grooves F″, through which the the exploded shell is passed down and out through the rear series of slots in the outer cartridge-cylinder.

K is the outer cartridge-cylinder, and is, in reality, a sleeve, since it slips over the lock-cylinder, and revolves thereon by means of any suitable mechanism applicable to same. Its exterior surface is plane, but its interior is provided with the double reversible spiral cam L, as shown in Fig. 3 of the drawings, consisting of a cam formed by two grooves cut one on either side of an intervening strip of material. This cam L is constructed with concave inclines *l l* formed on its forward surface, respectively opposite the acute angles of each of the two rear cams L′, whereby the firing-case is caused to recede sufficiently to allow the lugs of the pin-handle engaging with the rear surface of such cam L′, and thence, in the operation of the piece, the handle withdraws the pin from its case by the forward advancement of such case under its engagement with the cam L. In rear of this double cam are the cams L′, similarly raised from the immediate surrounding surface of the cylinder, and of a triangular form. The acute angle of this triangular cam is in a plane continuing the line of direction formed by the rear surface of the cam L as the latter runs near the extreme rear of the cylinder, and before said cam L curves forward. This cam L′ withdraws the firing-pin in the revolution of the cylinder, since the lugs of its handle engage therewith, while the lugs of the firing-pin carry the case forward as the revolution of the cylinder with its cam L forces forward the lock. The forward circumference of the cylinder K is provided with a front series of cartridge-feeding slots, M, and a rear series of empty-shell-ejecting slots, N, the operation of which will appear afterward. P is the inner cartridge-cylinder, having a rear collar or supporting-flange, for sustaining the outer cartridge-cylinder and the intermediate lock-cylinder. Its interior surface is smooth, while its exterior is provided with a double reversible cam, Q, and triangular raised cams Q′, exactly correspondent to the cams L and L′ upon the inner face of the outer cartridge-cylinder K. This inner cylinder P is also provided with a front series of cartridge-feeding slots, R, and a rear series of exploded-shell-ejecting slots, S, which operate, in connection with the lock-cylinder and outer cylinder, as will hereafter appear.

Any hopper-case provided with a respective feeding and ejecting slot, corresponding to the feed and discharge of the outer cartridge-cylinder K, may be used.

These cylinders may be revolved by any suitable mechanism, either a worm-gear, or any gearing or other device capable of appropriately turning or revolving the cylinders from right to left, and from left to right, either or both, and I do not limit myself to any particular means.

The cartridges are fed through the feeding-slot of the case into the open feed-slots M of the outer cylinder K, where they first fill the top grooves F′ of the lock-cylinder, and when such are full, the revolving inner cartridge-cylinder P carries the cartridges down into the lower slots F″ of the lock-cylinder F. T is the lock-case, having rear lugs *t*, suitable to be engaged with the double cams L and Q, respectively, on either cartridge-cylinder K and P, while its forward portion is beveled out or cut away, so as to be of less area dimensions. Secured by pivots to the forward extremity of the case are the spring-extractors U, whose rear ends are firmly seated in the main case.

These extractors are of such material and curved inclined construction as to constitute a spring in themselves when acted upon by a force angular to the plane of such spring, while the firing-pin is provided with a handle, also carrying lugs, which engage with the cams L′ and Q′ on the cylinders K and P, respectively, and is thus retracted or thrown forward.

The pin is encircled by a torsion-spring, and in the rear of the point of the pin is a coniform

construction, t', which as the pin comes forward within its case impinges against the under or interior sides of the extractors, and tends to force the spring of same outward, which, being a leverage of the first class, tends to close the extractors, and grasp the cartridge; but upon the retraction of the pin within its case the inclined plane of the coniform projection t' on the pin rides from out the inclines formed on the interior of the extractor, near its pivoted fulcrum, and thus releases same from pressure, when the ejector-clamps open and drop the shell of the cartridge.

The operation of the foregoing-described mechanism is as follows: Suppose the upper portion of the cartridge-cylinder to contain a cartridge, it will take none from the feed-case; but should it contain none, one will fall into the slot, and be carried to the first empty slot found, where it will be deposited. Suppose it to have been deposited: the lock will move forward, place it into the rear of the barrel, against which the extractors impinge, close over, and grapple the rim or head of the cartridge, which is exploded by the liberation of the firing-pin, which holds them in this position until the shell is withdrawn to the rear set of slots, when the firing-pin is slightly withdrawn from the lock, and allows the extractor to open and liberate the shell, which is passed, by force of gravity, into one of the rear slots of the carrier-cylinders. Suppose it to have been deposited in the inner portion of the cylinder: it will be carried around until it reaches one of the slots between the lock-guides, when it will pass to the outer portion of this cylinder, and thence from the gun.

Having fully described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. A battery-gun, consisting of a central gun of heavy caliber, surrounded by a series of smaller stationary guns, substantially as and for the purpose described.

2. The combination, with a gun having a conical screw-tapped breech, of a corresponding cap or breech-piece, substantially as and for the purpose described.

3. The combination, with a stationary lock-cylinder, of a revolving cartridge-cylinder, substantially as and for the purpose described.

4. The combination, with a stationary lock-cylinder, of a cartridge-cylinder constructed with cams or grooves, whereby the firing mechanism feeds, discharges, and ejects the cartridge, substantially as and for the purpose described.

5. The combination, with the lock-cylinder of a battery-gun, of a cartridge-cylinder, provided with a double reversible spiral cam, substantially as and for the purpose described.

6. The combination, with a gun-lock, of two independent cartridge-cylinders, provided with corresponding cams on the inner and outer face, respectively, of same, substantially as and for the purpose described.

7. The combination, with a gun-lock, of a cartridge-cylinder provided with a cam, constructed to operate said lock by being revolved in either direction, substantially as and for the purpose described.

8. The combination, with suitable gun-locking mechanism, of two independent cartridge-cylinders and double reversible spiral cams, substantially as and for the purpose described.

9. The combination, with a revolving cartridge-cylinder, of a stationary lock-cylinder provided with slots, in which operates the lock of the gun, substantially as and for the purpose described.

10. The stationary lock-cylinder, provided with a series of gun-barrels secured to the face-periphery of same, substantially as and for the purpose described.

11. The stationary lock-cylinder, constructed with feeding and ejecting slots, in combination with a revolving cartridge-cylinder, substantially as and for the purpose described.

12. The combination, with the locking mechanism of a stationary gun, of a revolving cartridge-cylinder having suitable feeding and ejecting slots, substantially as and for the purpose described.

13. The combination, with a firing-pin, of a spring-extractor, constructed substantially as described, whereby, upon withdrawal of the exploded shell from the barrel of the gun, the same is released by the retraction of the pin.

14. The firing-lock, consisting of a case and pin, respectively, provided with rear lugs, said pin having a coniform forward construction, in combination with spring-extractors, substantially as and for the purpose described.

15. The combination, with the central gun and stationary surrounding barrels, of the centrally-located trunnions, for supporting same upon the main carriage, substantially as and for the purpose described.

16. A series of stationary guns mounted upon a single carriage, and operated by revolving cylinders, substantially as and for the purpose described.

17. The combination, with a series of stationary gun-barrels, of any suitable axial support, said barrels being loaded and discharged by one or more revolving cartridge-cylinders and connecting lock mechanism, substantially as and for the purpose described.

18. The combination, with the cartridge cylinder or cylinders of a battery-gun, of a double reversible spiral cam, substantially as and for the purpose described.

In testimony that I claim the foregoing I have hereunto set my hand this 23d day of December, 1874.

ALONZO E. MILTIMORE,
U. S. Army.

Witnesses:
LEVERETT L. LEGGETT,
J. TYLER POWELL.