

GEORGE O. KINNE.

Improvement in Operating Machine Guns.

No. 120,588.

Fig. 1.

Patented Nov. 7, 1871.

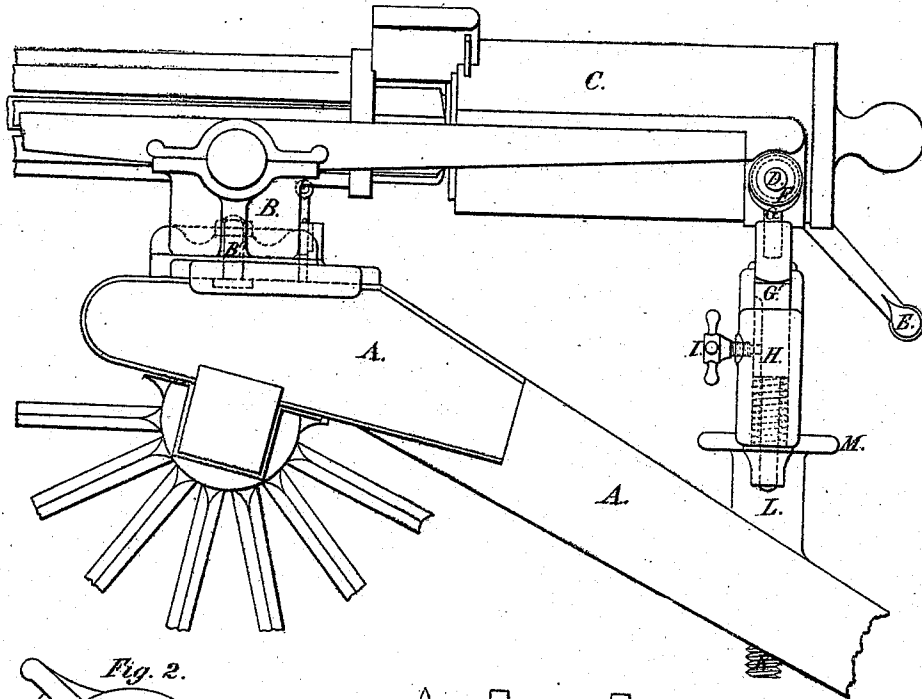


Fig. 2.

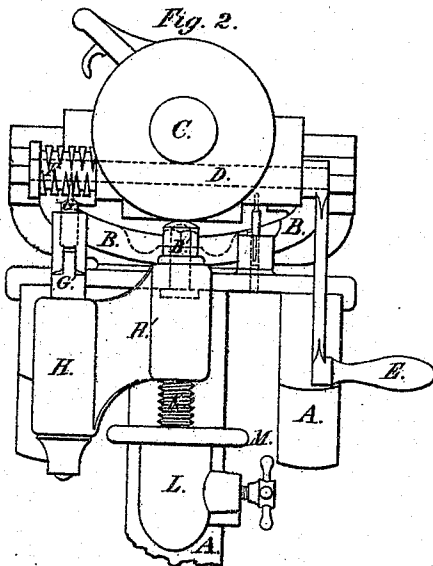


Fig. 5.

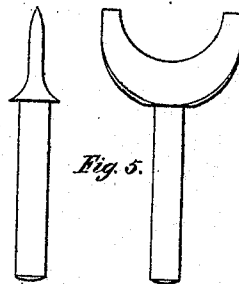


Fig. 6.

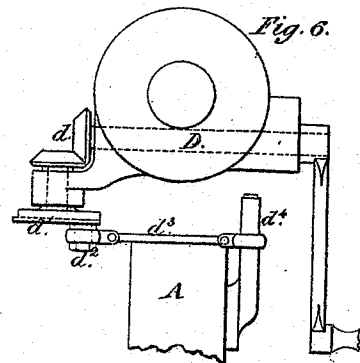


Fig. 4.

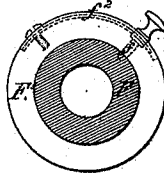
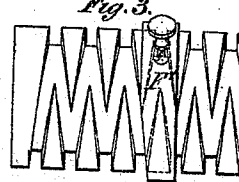


Fig. 3.



Witnesses.

C. B. Richards.
E. J. Murphy.

Inventor.

Geo. O. Kinne

UNITED STATES PATENT OFFICE.

GEORGE O. KINNE, OF HARTFORD, CONNECTICUT, ASSIGNOR TO COLT'S PATENT FIRE ARMS MANUFACTURING COMPANY, OF SAME PLACE.

IMPROVEMENT IN OPERATING MACHINE-GUNS.

Specification forming part of Letters Patent No. 120,588, dated November 7, 18

To all whom it may concern:

Be it known that I, GEORGE O. KINNE, of Hartford, in the county of Hartford and State of Connecticut, have invented a new and useful Mode of Operating Machine-Guns; and I do hereby declare the following to be a full, clear, and exact description of the same, reference being had to the accompanying drawing making part of this specification, my said invention being the one for which an English patent was granted to A. V. Newton, September 12, 1870.

The object of my invention is to give the Gatling gun and other repeating field-guns of the like character reciprocating motion in a nearly horizontal plane while in the act of discharging projectiles. To this end the block carrying the bearings for the trunnions is mounted on a center-pin, and fitted to the spindle which works the plungers for discharging the gun is any suitable mechanical device that will, when rotated, by reason of its connection with a fixed point, impart the desired reciprocating motion to the gun—that is to say, the rotary motion of the spindle which effects the discharge of the gun is used to obtain the desired reciprocating motion while the gun is firing.

In the accompanying drawing, Figure 1 is a side elevation of parts of a Gatling gun mounted according to this invention, the rear wheel being removed the better to exhibit the fittings of the gun; and Fig. 2 is an end elevation of the same.

A A is the gun-carriage, of any approved construction, and upon it is mounted the swivel-block B, in which bearings are formed to receive the trunnions of the gun C. This block is secured to the carriage by a center-pin, B', which allows of the block turning to bring the gun to bear upon any given point within the arc of its motion. K is a vertical adjusting-screw for regulating the elevation of the gun. It passes through a long sleeve, L, fastened to the trail A of the carriage, and is prevented from turning in the sleeve by a groove and feather. The nut which effects the vertical movement of the screw fits into the top of the sleeve L, and is furnished with a hand-wheel, M, by which it may be operated. In the rear end of the gun is mounted a transverse spindle, D, the rotation of which, by means of the winch-handle E, effects the charging and discharging of the gun in a manner well known, and therefore requiring no special description in this

place. Upon the opposite end of the spindle D to that which is fitted with the winch-handle a cylinder, F, is keyed. On this cylinder an endless cross-cut groove is formed to receive the tapered ends of a forked piece, G, which is dropped into a socket jointed to a rod, G', and is free to swivel therein. The cylinder F is shown detached at Figs. 3 and 4, Fig. 3 being a side view of the cylinder, and Fig. 4 an end view of the same. Fig. 5 shows the fork G detached, and in Fig. 3 it is shown in connection with the cylinder F. The nut G' fits in a socket, H, formed in a bracket-piece, H', attached to the elevating-screw K, and it is made fast in its socket by a tightening-screw, I, furnished with arms for turning it. It will now be understood that, as rotary motion is given to the spindle D in the act of firing the gun, and the cylinder F is rotated, the gun, with its block B, will, by reason of the connection of the rotating cylinder F with the stationary forked piece G, be caused to turn on the center-pin B', and it will thus deliver its shot in an arc corresponding to the to-and-fro motion it is receiving. F', Figs. 3 and 4, is an adjustable ring surrounding the cylinder F, and formed with a thread that enters the groove of that cylinder. This ring serves to close one end of the groove and thereby make it endless, but its use is further to cover up a portion of the grooved surface and thereby act the part of a switch to turn the fork into return-groove at any desired point and shorten the length of traverse of the cylinder when desired, and limit the range of motion of the gun. The ring F' is fitted with a stop-pin, f, which is forced inward by a spring, f². This pin is intended to enter any one of a series of holes formed to receive it in the cylinder F, and by locking into one of such holes it secures the ring F' in a proper position on the cylinder for closing the cross-cut grooves. There are two rows of holes formed in the cylinder F to receive this pin f, and these rows are situated midway between the lines of intersection of the right-and-left handed grooves. The ring, therefore, admits of adjustment at every half turn. To facilitate the adjustment of this ring it is provided with a milled or ribbed periphery, and a head is formed on the stop-pin f, by which it may be lifted clear of the cylinder. The rod G' carrying the forked piece G is made adjustable vertically in order that the forked piece may be pressed down and taken out

of gear with the cylinder, in which condition it may be held by the tightening-screw I. This permits the operation of the gun in the usual way without the use of the traversing motion. When this is done the swivel-block B can be locked, by a locking-pin, N, to the fixed plate in which the center-pin B' fits, and thereby prevented from turning relatively to the carriage.

From the above description it will be understood that other mechanical devices may be employed for converting the rotary motion derived from the spindle D into a reciprocating motion for moving the gun on its swivel-pin B' in the plane of its axis. One such modified device is illustrated at Fig. 6, where, by means of a pair of bevelled pinions, d , a grooved disk, d^1 , keyed to the axle of the second pinion and carrying a crank-pin, d^2 , adjustable in its groove is caused to rotate. By linking this crank-pin, through a link-rod, d^3 , with a fixed guide-pin, d^4 , projecting vertically

from the trailing-piece A, the rotation of the spindle D will impart to the gun a reciprocating motion on the pin B', as before described.

Having described my invention, and explained the manner of carrying the same into effect, what I claim, and desire to secure by Letters Patent, is—

The grooved cylinder F, or the mechanical equivalent thereof, in combination with the rotary shaft by which the discharge of the gun is produced, whereby the described lateral reciprocating motion of the gun is obtained from the motion of the parts which effect the discharge, substantially in the manner hereinbefore set forth.

In testimony whereof I have hereunto set my hand this 29th day of August, 1871.

Witnesses: GEO. O. KINNE.

W. B. FRANKLIN,
C. B. RICHARDS.

(105)