

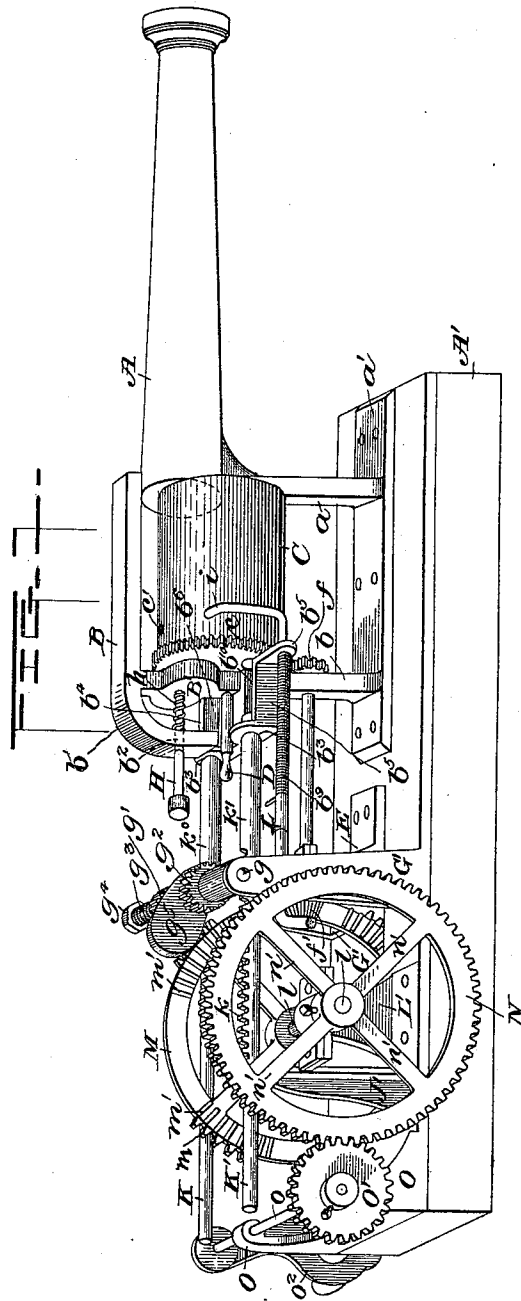
(No Model.)

2 Sheets—Sheet 1.

F. NEILS.
MACHINE GUN.

No. 562,846.

Patented June 30, 1896.



Witnesses.
C. W. Smith
J. B. Tabler.

Inventor.
Frank Wiley
By C. A. Walton
Attorney

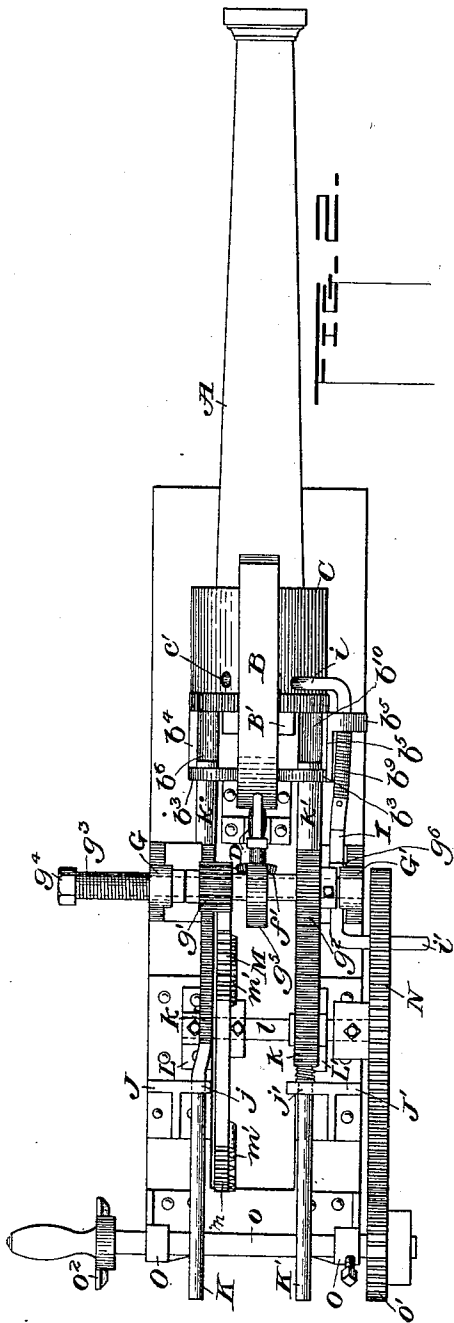
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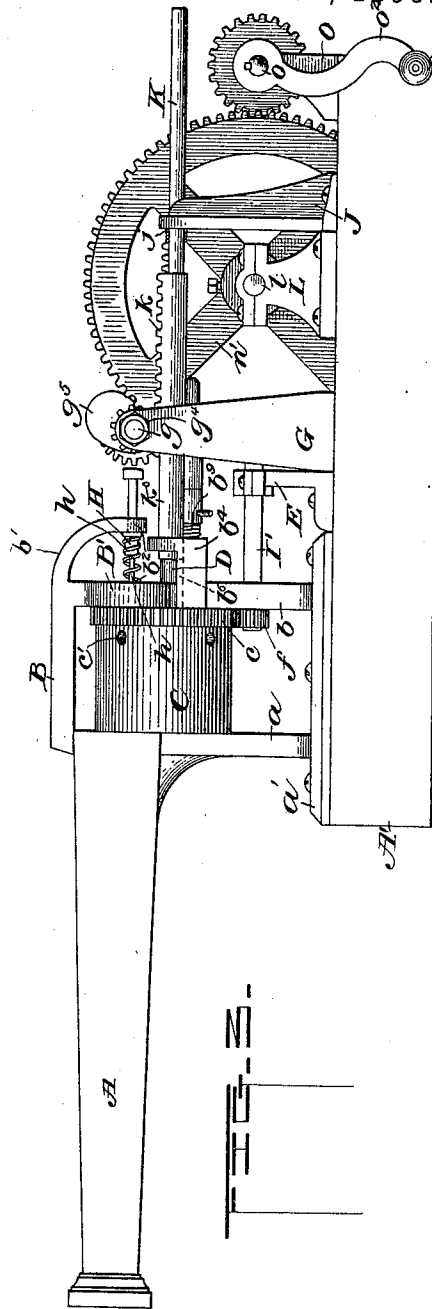
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UNITED STATES PATENT OFFICE.

FRANK NEILS, OF DAVENPORT, IOWA.

MACHINE-GUN.

SPECIFICATION forming part of Letters Patent No. 562,846, dated June 30, 1896.

Application filed October 22, 1894. Serial No. 526,654. (No model.)

To all whom it may concern:

Be it known that I, FRANK NEILS, a citizen of the United States, residing at Davenport, in the county of Scott, State of Iowa, have invented certain new and useful Improvements in Machine-Guns, of which the following is a specification.

My invention relates to machine-guns, and the object of the invention is to provide a gun which may be automatically loaded and fired, the device being especially adapted to be loaded first with a ball or projectile and subsequently with a charge of powder. Provision, however, may be made for the use of cartridges.

For a full and complete understanding of my invention, reference is to be had to the accompanying drawings, wherein corresponding letters indicate like parts in the several views, and in which—

Figure 1 is a perspective view of the gun. Fig. 2 is a plan view of the same. Fig. 3 is a side elevation taken from the side opposite from that shown in Fig. 1.

In the drawings, A refers to the barrel of the gun, having a suitable framework B, integral therewith, at its rear end, the whole being supported by two standards *a* and *b* upon a suitable base *a'*, which in turn is secured in any well-known manner to a foundation *A'*. The rear standard *b* is enlarged at *B'* near its upper extremity to give it more width and additional strength as a resistance-block, as will hereinafter more fully appear.

b' is a rearwardly-extending bracket having a depressed end with an aperture *b²* therein. This bracket may be integral with the framework.

H is a firing-pin passing through this aperture and a corresponding aperture in line therewith in the resisting-block *B'*, and *h* is a small wire coil, one end of which is attached to this pin and the other end bears against the resisting-block to withdraw the pin after it has been forced forward to fire the gun, as hereinafter described.

Between the two standards *a* and *b* a revolving chambered cylinder C of well-known form is secured to revolve by means of a pin D, passing centrally through the cylinder and

the standards *a* and *b*, thus permitting its chambers to be successively brought in line with the barrel of the gun. The rear end of cylinder C has formed thereon a cogged periphery *c*, and adjacent to this periphery, at certain intervals, are shallow apertures *c'* for a purpose hereinafter referred to.

I is a small rod mounted to turn in suitable brackets *b⁸*, on a bracket *b⁵*, (see Fig. 2,) and bracket *g⁶*, on the interior of a standard *G'*, hereinafter described, and *b⁹* is a small wire coil, one end of which is secured in any well-known manner to bracket *b⁵* and the other end to said rod. The front end *i* of this rod is bent inwardly to engage the apertures *c'* on the outer surface of the cylinder, and its rear end *i'* is bent outwardly and passes between the spokes of a wheel N, hereinafter referred to. The tension of this spring tends to hold the inner end *i* of the rod in one of the apertures *c'* of the cylinder. Upon each side of standard *b*, about midway of its height, are formed exterior brackets *b⁴* *b⁵*, having enlarged apertured ends forming guideways *b³*, and in front and in line with these guideways are provided depressions or feeding-chambers *b⁶* *b¹⁰*, open at their front ends, which are referred to later on. In rear of standard *b* is a short standard E, and passing through the lower part of standard *b*, and supported thereby and by suitable bearings in the upper end of standard E, is a shaft I', having a small cog-wheel *f* on its front end engaging cog-wheel *c* on the cylinder, and provided on its rear end with a small pinion *f'* for engaging gearing on the interior of a wheel M, hereinafter described.

G *G'* are two oppositely-arranged standards secured to the foundation *A'*, near the sides thereof, in rear of standard E, and mounted in suitable bearings on the upper ends of these standards is a shaft *g*. On this shaft, adjacent to standard G, is securely mounted a pinion *g'*, and adjacent to *G'* is secured a larger pinion *g²*. Between these pinions is firmly secured on said shaft a cam *g⁵*, which when the shaft revolves contacts with the rear end of the firing-pin H and forces the same against the tension of spring *h*, to automatically fire the gun, as will duly appear.

J J' are uprights in rear of standards G G', and have guideways j, j' formed in their upper ends, through which and guideways b^3 , on brackets $b^4 b^5$, slide rods K K', having racks k formed on their upper surfaces centrally of the same. The ends of these rods are of similar construction, and the front ends $k^0 k'$ serve as ramrods for forcing projectiles and powder from the feeding-chambers $b^6 b^{10}$, respectively, into the chambers of the cylinder, in turn, said rods being forced forward by engagement of the racks on these rods with pinions $g' g^2$, respectively, as referred to hereinafter. Shaft g projects through and slightly beyond standard G, and has a wire coil g^3 thereon, one end of which is suitably secured to a nut g^4 , firmly screwed on the outer end of the shaft, and the opposite end is suitably secured to standard G. After the racks K K' and ramrods $k^0 k'$ have been forced forward to load the cylinder, the tension of wire coil g^3 forces the racks backward to their normal position, as hereinafter referred to.

L L' are two standards mounted on the foundation A' directly in front of J J', and have a shaft l mounted in bearings at their upper ends. On this shaft, adjacent to standard L, is a rigidly-mounted gear-wheel M, having teeth m arranged, at certain intervals, on its periphery, and adjacent to these teeth, on its inner surface, near the periphery, are teeth or cogs m' . Shaft l extends slightly beyond standard L' and has secured securely on its outer end a cog-wheel N with spokes n' .

At the rear end of foundation A' is suitably mounted in two standards O a shaft o , having secured on one end a gear-wheel o' , engaging gear N, and upon its opposite end a crank or band-wheel o^2 , to which power, steam, electric, or hand power, may be applied to operate the machine.

Shorter ramrods of suitable length may be substituted for ramrods $k^0 k'$ when cartridges are used, as will readily appear.

In the operation of the device, a ball or projectile is first placed in the feeding-chamber b^{10} , and a charge of powder in suitable form is subsequently placed in chamber b^6 , and these charges are renewed, at the proper time, as fast as they are forced into the chambers of the cylinder. The ball or projectile is first rammed into one of the chambers of the cylinder in line with ramrod k' , this rod being forced farther into the chamber than ramrod k^0 in order to leave sufficient space for the charge of powder in its rear, as pinion g^2 , engaging the rack of this particular rod, is of larger diameter than pinion g' , engaging the rack of rod k . As the cylinder is revolved, by means of gears $c f f' m' N o'$, the chamber loaded with the projectile comes into line with ramrod k' . The charge of powder is then rammed home, and as the cylinder continues to revolve the loaded chamber is brought into line with the barrel of the gun and the firing-

pin H, which at this instant is forced forward by cam g^5 , thus firing the load by percussion.

The gearing is so regulated (see gear-wheel M and the teeth $m m'$ thereon, at fixed intervals) that the cylinder is momentarily stationary during the loading, and is momentarily locked in firing position by rod I engaging apertures c' on the cylinder before referred to. This rod I, after the firing, releases the cylinder to revolve by its rear end i' being engaged and thrown inwardly by one of the spokes n of the wheel N, which is adjusted to operate this rod I at the proper time.

The gearing and parts of the mechanism of the device are all so adjusted that the chambers of the cylinder are successively loaded, the ramrods opportunely withdrawn, and the chambers fired as each loaded one comes into line with the barrel of the gun.

Having thus described my invention, what I claim is—

1. In a machine-gun, the combination of a barrel, an open framework in rear thereof, standards supporting said barrel and framework, a revolving chambered cylinder mounted in said framework, between the standards, a gear-wheel on the outer surface of the cylinder, a gear-wheel meshing therewith, gearing to revolve said wheels to revolve the cylinder to bring its chambers into line with said barrel, an apertured resistance-block, a firing-pin mounted in the framework in rear thereof, brackets on the standard, at the rear of the framework, provided with guideways, feeding-chambers in said brackets for projectiles and powder, standards on the foundation in rear of said framework, ramrods having racks near their middle portions, supported by said guideways and latter standards and in the same horizontal plane with said feeding-chambers, a spring-controlled shaft mounted on the latter standards, and pinions thereon engaging said racks, a cam on the shaft to operate the firing-pin, a rod to lock the cylinder in firing position, a gear-wheel M having teeth at regular intervals on its circumference and on its side to engage one of said pinions to operate the ramrods and firing-pin, and in gear with gear-wheels to revolve the cylinder, means to apply power to gear-wheel M, and to operate the pin to lock and unlock the cylinder, substantially as described and set forth.

2. A machine-gun comprising a barrel, and open framework in rear thereof, standards supporting said barrel and framework, a revolving chambered cylinder mounted in said framework, a gear-wheel on the outer surface of the cylinder, a gear-wheel underneath the cylinder meshing with the first gear, gearing to revolve said wheels to revolve the cylinder to bring its chambers into line with said barrel, an apertured resistance-block, a firing-pin on the framework in rear thereof, brackets on the standard at the rear of the framework,

provided with guideways, feeding-chambers in said brackets for projectiles and ammunition, standards on the foundation in rear of the framework, ramrods having racks, supported by said guideways and latter standards, a spring-controlled shaft mounted on the latter standards, pinions on said shaft engaging said racks, a cam on said shaft to operate the firing-pin, gearing meshing with said pinions and said gearing, to operate the ramrods and to revolve the cylinder, as and for the purposes set forth.

FRANK NEILS.

Witnesses:

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