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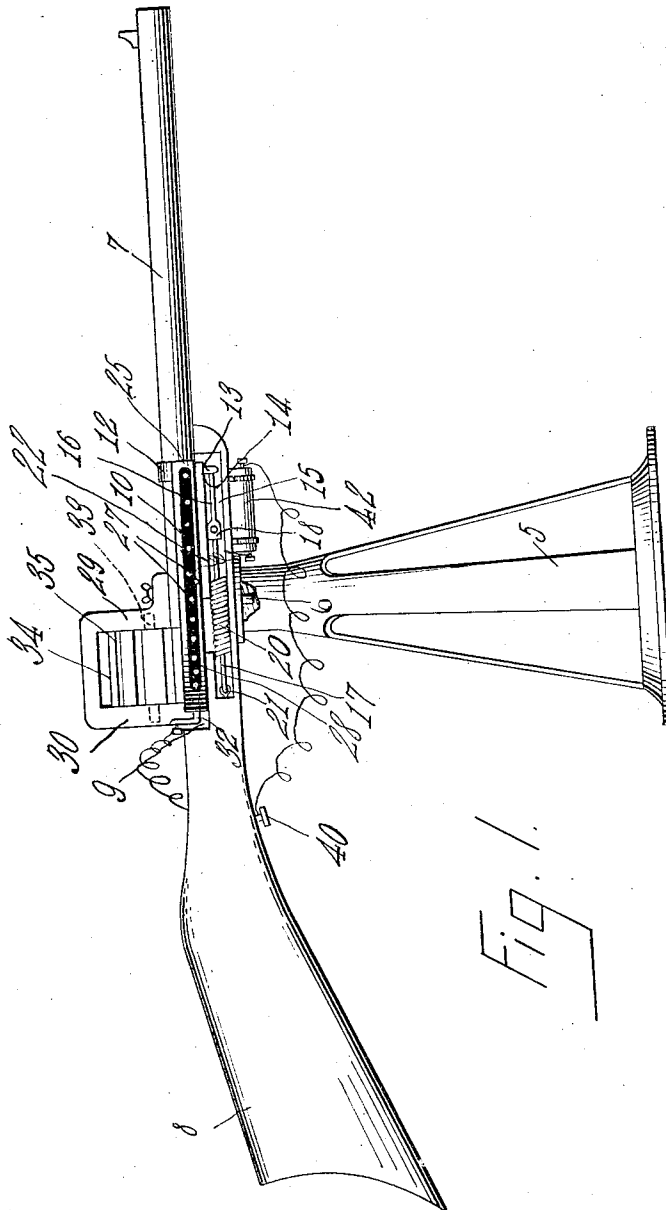


Fig. 1.

Witnesses

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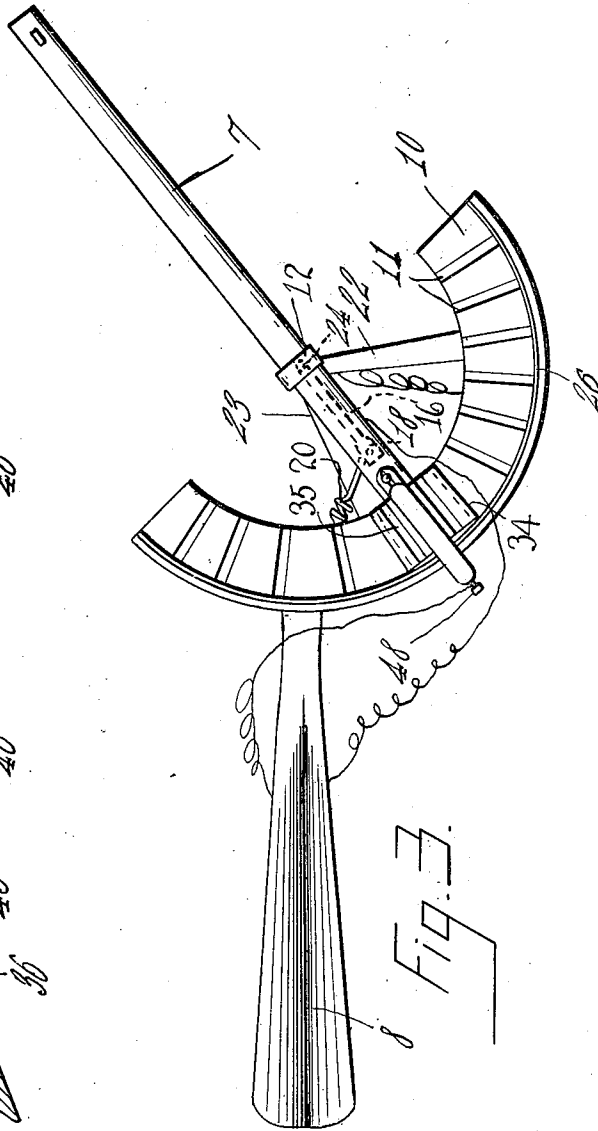
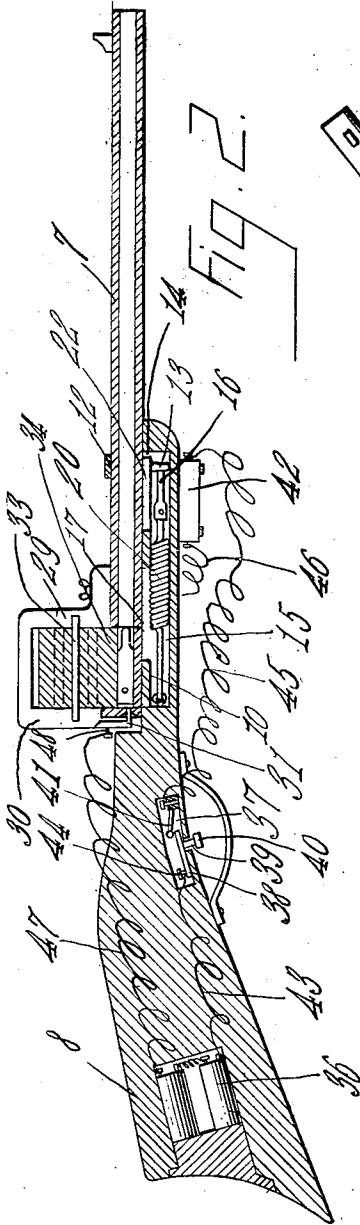
R. RAINES.
MACHINE GUN.

APPLICATION FILED JUNE 28, 1909.

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Patented July 26, 1910.

3 SHEETS—SHEET 2.



Witnesses

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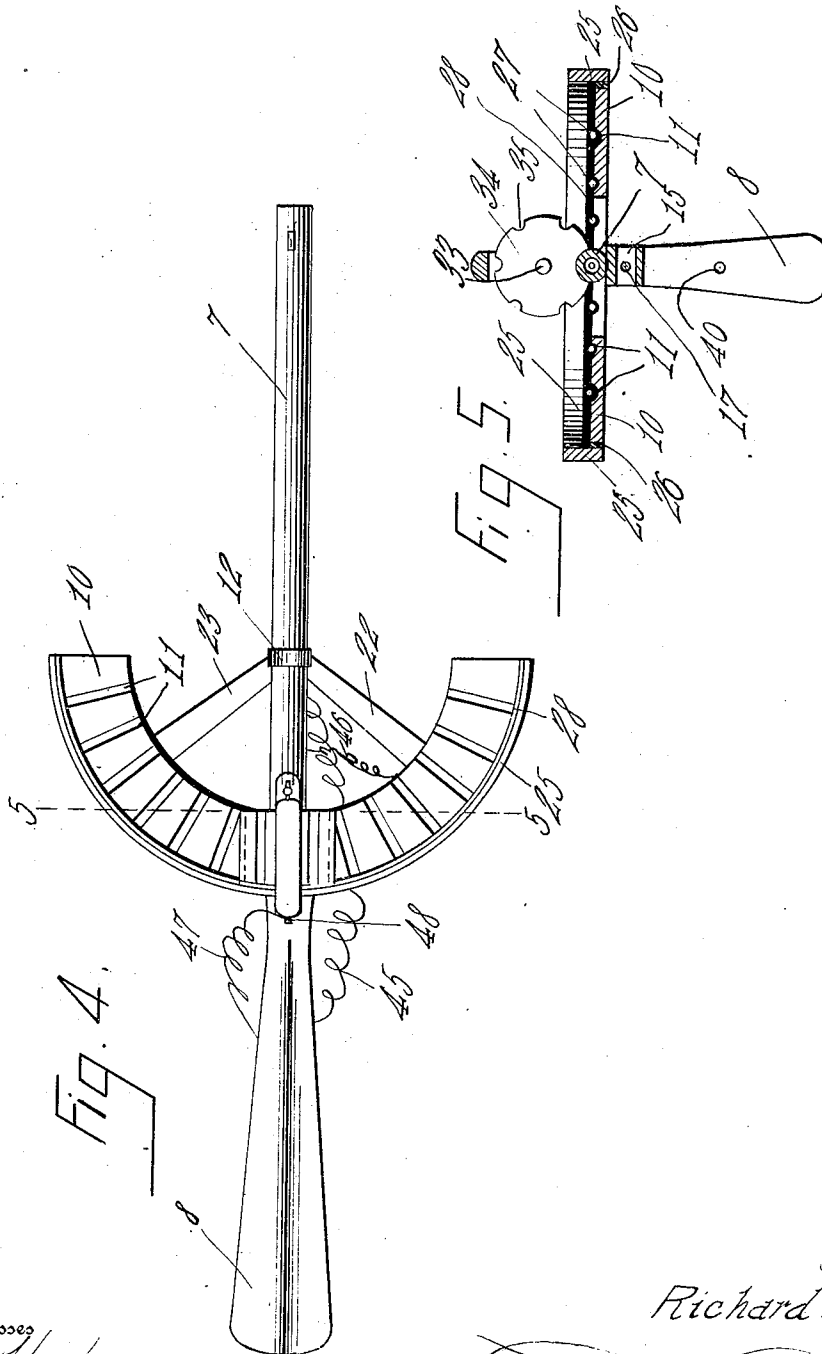
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UNITED STATES PATENT OFFICE.

RICHARD RAINES, OF NEW YORK, N. Y.

MACHINE-GUN.

965,538.

Specification of Letters Patent.

Patented July 26, 1910.

Application filed June 28, 1909. Serial No. 504,752.

To all whom it may concern:

Be it known that I, RICHARD RAINES, a citizen of the United States, residing at New York, in the county of New York, State of New York, have invented certain new and useful Improvements in Machine-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 appertains to make and use the same.

This invention relates to improvements in machine guns and more particularly to the electrically fired type.

It has for its object the provision of a device of that kind which may be applied to fire projectiles in the manner known as "fan fire" and also operated to fire projectiles at one spot.

Another object is the provision of an improved form of cartridge tray which is adapted to feed cartridges to a cylinder and in position to be fired.

A further object is the provision of an improved form of contact closer which is adapted to close the circuit between a battery and a cartridge when the latter is in position to be fired.

With these and other objects in view as will more fully hereinafter appear, the present invention consists in certain novel details of construction and arrangement of parts, hereinafter fully described, illustrated in the accompanying drawings and more particularly pointed out in the appended claims; it being understood that various changes in the form, proportion, size and minor details of the device may be made without departing from the spirit or sacrificing any of the advantages of the invention.

In the accompanying drawings forming part of the specification:—Figure 1 is a side elevation of the device. Fig. 2 is a longitudinal sectional view of the same. Fig. 3 is a plan view and showing the position of the parts when the cartridges are to be fired at one spot. Fig. 4 is a similar view but showing the position of the parts when the device is to be operated for "fan fire." Fig. 5 is a sectional end elevation taken on the line 5—5 of Fig. 4.

Similar numerals of reference are employed to designate corresponding parts throughout.

The mount upon which the device is

placed is designated by the numeral 5 and is of a well known type having at its upper end the usual vertical extending openings for the reception of the swivel pin 6 to which the gun is secured. The barrel of the latter is designated by the numeral 7 and the stock by the numeral 8. The forward end of the latter is rabbeted as shown at 9 to provide the usual flat support for the rear end of the barrel 7. The rear end of the barrel 7 is spaced from the rear end of the rabbeted portion 9 for a considerable distance, and into the space between the rear end of the barrel 7 and rear end of the rabbet is disposed what will subsequently be termed a cartridge carrier or tray 10. The latter is substantially semi-circular in contour and of a width somewhat less than the distance between the rear end of the barrel and corresponding end of the rabbet. The cartridge tray is disposed in a horizontal plane and its opposite faces are flat, the upper of said faces being provided with a plurality of cartridge grooves 11. The latter converge toward the forward edge of the plate and are semi-circular in cross section and of a depth equal to one-half the diameter of the cartridge to be employed, or substantially so.

By referring now to the drawings it will be seen that the barrel 7 is swiveled on the stock 8 by means of a collar 12, the latter being provided on its lower side with a depending lug 13 which fits into a socket 14 formed at the forward end of the stock. That portion of the latter underlying the rabbet 9 is transversely recessed as shown at 15, the recess extending from a point adjacent the rear end of the rabbet 9 and terminating in the socket 14. Connection between the lug 13 of the collar 12 and rear end wall of the socket is established by means of a pair of links 16 and 17. The forward section of these links has its forward end fixedly secured to the lug 13 and its rear end terminates in a pair of jaws 18. The rear section 17 is preferably formed of a single piece of resilient metal, the intermediate portion of which is coiled or twisted so as to provide a retractile spring, one terminal of which is pivoted between the jaws 18 and the opposite terminal of which is engaged by a hook 21 secured to the rear end wall of the recess 15. Thus it will be seen when the barrel is moved to the right or left the links 16 and 17 will be rocked as shown in Fig. 3, whereby the

spring will be placed under tension so that when the barrel is released it will be restored to its normal position by virtue of the retractile spring 20.

5 As before stated, the cartridge-tray is disposed in the space between the rear end of the barrel and rabbet 9 and connection between the cartridge tray and barrel is established by means of a pair of brace rods 10 22 and 23, the inner ends of which are pivoted on the lug 13 of the collar 12 and the outer ends of which are fixedly secured to the forward edge and adjacent the opposite ends of the tray. Thus it will be seen when 15 the stock is held stationary and it is desired to move the tray 10 to the right the same can be done by the operator pressing on one end of the tray which will force the latter to the position shown in Fig. 3.

20 It will be observed that the rear or convex edge of the cartridge tray is provided with a vertical wall 25. This member is preferably of metal and is insulated from the tray by a strip of insulating material 25 designated by the numeral 26 (Fig. 5), the wall 25 is medially provided with a plurality of spaced openings 27, the walls of which are flared as shown in Fig. 2. These openings correspond with the cartridge 30 grooves 11 formed in the upper face of the plate and the spaces between the openings 27 are insulated with suitable material as shown at 28.

Rising from the upper side and disposed 35 at the rear end of the barrel is what will subsequently be termed a circuit closer. This member is substantially "U" shaped having one of its limbs 29 fixedly secured to the upper side and at the rear end of the 40 barrel 7 while its opposite limb 30 extends into the space between the vertical wall 25 and rear end of the rabbet 9. The end portion of the limb 30 is reduced in thickness and constitutes a spring arm 31, the end 45 portion of which is bent forwardly and at right-angles as shown at 32 and is disposed in a plane with the openings 27 of the vertical wall 25. The bent portion 32 of the spring arm normally projects through the 50 opening 27 with which it alines as clearly shown in Fig. 2 and in position to bear on the contact button of the cartridge.

Journalled in the middle portion of the limbs 29 and 30 are the opposite ends of a 55 shaft 33 and keyed to the shaft 33 and disposed between the limbs 29 and 30 is what will subsequently be termed a cartridge cylinder 34, the outer face of which is provided with a plurality of cartridge grooves 35. 60 The latter are spaced apart for a distance corresponding exactly to the spaces between the cartridge grooves 11 in the plate 10 and like the latter are semi-circular in cross section and of a depth equal to one half the 65 diameter of the cartridge to be used. The

cartridge cylinder is so arranged that when turned the lower-most of the grooves 35 will be coincident with the upper half of the bore of the barrel 7 and it might be here stated, that the grooves 11 when brought 70 into alinement with the bore of the barrel will be coincident with the lower half of the latter, whereby the grooves 11 and 34 will coöperate and present a cylindrical opening in direct alinement with the bore of the 75 barrel.

As before stated, the device is intended for use with electric cartridges or those in which a conducting wire is disposed, one terminal of the latter being spaced from 80 the wall of the cartridge so as to form a spark gap, the outer or butt end of the cartridge being provided with a contact button which is adapted to be engaged by the arm 32 of the circuit closer and when so 85 arranged a spark will be produced in the interior of the shell which will ignite the powder. This particular shell forms no part in the invention and is shown merely for purposes of illustration, in order to produce a current of electricity which will operate to ignite the powder the following construction is employed:—By referring now to Fig. 2 it will be seen that located 90 in the butt of the stock are a pair of batteries 36 which are connected in series and formed in the butt and adjacent the batteries is a recess 37. In the recess 37 is one end of a contact plate 38, the outer face of which is provided with a shank 39 terminating in a button 40. A spring arm 41 has 100 one end secured to the forward end wall of the recess and its free end over-lies and is spaced from the free end of the plate 38. A spark coil 42 is located on the lower side 105 of the stock and adjacent the forward end thereof. A conducting wire 43 has one terminal connected with one pole of the battery and its opposite terminal connected with a binding screw 44 on the plate 38, a 110 second conducting wire 45 has one terminal secured to the arm 41 overlying the free end of the plate 38 and its opposite terminal connected to one terminal of the sparker 42. The opposite terminal of the sparker and the 115 cartridge tray are connected by means of a conducting wire 46, the opposite terminal of the battery 36 and spring arm 31 are connected by means of a conducting wire 47, one end of which is secured to the binding 120 post on the battery and the opposite end to a binding post 48 on the spring arm 31.

In the operation of the device the cartridges before described, are placed in the grooves 11 of the tray 10 and when it is 125 desired to use the device for "straight fire" the tray 10 is moved until the cartridge at one end of the tray is in alinement with the bore of the barrel as before described. When the parts are in this position the 130

contact finger 32 will bear on the contact button of the cartridge; by now pressing the push button 40 the circuit between the battery and cartridge will be closed, where-
 5 by the spark within the latter will ignite the powder and the projectile will be expelled from the barrel as before described. When this has been done the cartridge tray may be moved to bring the next cartridge
 10 into alinement with the bore of the barrel, whereby the cartridge cylinder will be turned so as to bring the next groove over the cartridge. It will be observed during this movement, owing to the flared wall of the
 15 opening 27 in the wall 25, that little difficulty will be experienced in turning the cartridge tray. It will be further observed when the cartridge tray has been turned sufficiently far to force the end 32 out of
 20 the opening 27 that the circuit between the cartridge and battery will be open, due to the insulation 28 between the opening 27. During this movement of the cartridge tray the push button 40 may be held compressed
 25 so that when the tray has been moved sufficiently far to permit the end 32 to enter the next opening the circuit between the cartridge and battery will be immediately closed. Thus it can be seen that the device
 30 may be fired with great rapidity and with the aid of an extra operator the cartridges may be fed to the tray practically as fast as used.

In the use of the device for "fan fire" the
 35 operation is similar to that just described with the exception that the tray 10 is held stationary while the barrel and cylinder are rotated over the face of the tray. It is to be understood that the barrel 7 will be covered
 40 with a suitable water jacket in order to keep the barrel in a comparatively cool state.

Thus it can be seen that I have provided a device which is exceedingly simple in
 45 structure and comparatively inexpensive to manufacture, embodying few parts and these so arranged that the danger of derangement will be reduced to a minimum.

Having thus described my invention what
 50 is claimed as new, is:—

1. In a machine gun the combination with a barrel; of a rotatable cartridge cylinder carried by the barrel and exteriorly provided with a plurality of spaced cartridge
 55 grooves, and a feed plate provided with a

plurality of spaced cartridge grooves each of which coöperates with a groove of the cylinder to form a cylindrical opening in axial alinement with the bore of the barrel.

2. In a machine gun the combination with 60 a barrel; of a rotatable cartridge cylinder carried by the barrel and exteriorly provided with a plurality of spaced cartridge grooves and a horizontally disposed feed plate provided with a plurality of spaced 65 cartridge grooves each of which coöperates with a groove of the cylinder to form a cylindrical opening in axial alinement with the bore of the barrel.

3. In a machine gun the combination with 70 a pivoted barrel; of a rotatable cartridge cylinder carried by the barrel, and exteriorly provided with a plurality of spaced cartridge grooves and a feed plate disposed to the rear barrel and beneath the cylinder 75 and provided with a plurality of spaced cartridge grooves each of which coöperates with a groove of the cylinder to form a cylindrical opening in axial alinement with the bore of the barrel when the latter is 80 moved on its pivot.

4. In a machine gun the combination with a pivoted barrel; of a feed plate disposed to the rear of the barrel and provided on its upper face with a plurality of spaced 85 cartridge grooves, a rotatable cartridge cylinder carried by the barrel and exteriorly provided with a plurality of spaced grooves each of which is adapted to over-lie a groove in the feed plate to form a cylindrical opening 90 in axial alinement with the bore of the barrel.

5. In a machine gun the combination with a barrel, of a rotatable cartridge cylinder carried by the barrel and exteriorly provided 95 with a plurality of spaced cartridge grooves and a pivoted feed plate disposed in rear of the barrel and beneath the cylinder and provided on its upper face with a plurality of spaced cartridge grooves each of which is 100 adapted, when the feed plate is moved, to form with a groove of the cylinder a cylindrical opening in axial alinement with the bore of the barrel.

In testimony whereof, I affix my signature, 105 in presence of two witnesses.

RICHARD RAINES.

Witnesses:

RICHARD FLITTNER,
 RAYMOND BURNS.