The invention described herein may be manufactured and used by or for the Government for governmental purposes without the payment of any royalty thereon.

My invention relates to a revolver-type automatic weapon and more particularly to such a weapon for firing percussion cartridges.

Certain military ground applications such as tanks are now required to be capable of a rate of discharge comparable to that of the revolver-type automatic weapon presently installed in aircraft. The aircraft weapon is constructed for electrical discharge to provide minimum length and weight and exhaust gases enveloping the weapon are frequently ignited by sparks from the firing device. This condition, though undesirable, is not dangerous to personnel in the aircraft since aircraft weapons are enclosed in a remote compartment, but such a situation of course, cannot be tolerated within the confines of a tank. Also, it is highly desirable that a revolver-type weapon for use in a tank be constructed for firing standard percussion-fired ammunition, instead of the special ammunition required for electrical discharge.

The increase in personnel safety involved far outweighs the increase in length and weight of the weapon occasioned by the inclusion of a mechanical firing device in the ground weapon.

It is an object of my invention to provide an automatic revolver-type weapon for firing percussion cartridges.

A further object of my invention is to provide a mechanical device for firing percussion cartridges in an automatic revolver-type weapon.

It is also an object of my invention to provide a weapon of the type described having a gas exhaust port remote from combustion sources in the weapon.

Further aims and objects of my invention will be evident from the following explanation.

In carrying out my invention, a revolver-type weapon is provided with a firing pin slideable with respect to the recoil unit and biased to a normal position for discharging a percussion cartridge chambered in alignment with the barrel. The actuator of the weapon and a recoil unit are cooperatively operable to withdraw the firing pin from the spent cartridge during the initial portion of the rearward actuator stroke and the actuator is constructed to compress the firing pin spring further to cock the weapon during the remainder of the rearward actuator stroke.

Trigger and automatic sears are pivoted on the receiver and spring-biased to respectively retain the firing pin in the cocked position. The trigger sear is manually operated and the automatic sear is operated by a device including a release pivot on the receiver and an actuator pivot engageable therewith responsive to movement of the actuator.

The weapon is provided with a barrel having the usual radial passage for conducting the discharge gases thereof and the operating cylinder of the weapon is separated from the drum by a portion of the receiver to prevent combustion of cylinder exhaust gases by possible leaks of burning gas from the drum of the weapon.

For a more complete understanding of my invention, reference is made to the following description and the accompanying drawing, in which:

Fig. 1 is an elevational view, partly broken away of a weapon incorporating my invention;

Fig. 2 is an enlarged view of the firing device of Fig. 1;

Fig. 3 is a perspective view of the trigger sear mechanism;

Fig. 4 is a perspective view of the firing pin mechanism and the receiver mounting therefor;

Fig. 5 is a perspective view of the automatic sear, and

Fig. 6 is a perspective view of corresponding portions of the receiver and the actuator.

According to the drawing, an automatic revolver-type weapon 12 includes a receiver 14 with a recoil unit 16 slidable disposed thereon. The recoil unit is provided with a barrel 17 and a cartridge drum 18 provided with chambers 20 and corresponding index rollers 22. Cartridge drum 18 is rotatably mounted on a shaft 24 journaled in recoil unit 16. One of the chambers 20, with a percussion cartridge 26 therein, is shown in Fig. 1 in a firing station aligned with barrel 17.

A pair of bearing rings 28 and a spring 30 transmit recoil forces between recoil unit 16 and receiver 14 by means of pairs of recoil unit and receiver shoulders 32 and 34, respectively.

A recoil unit cylinder 36 having a piston 37 secured to a rearwardly projecting plunger 38 is connected to barrel 17 by a passage 39. Cylinder 36 is provided with air and gas vents 40 and 41 for respective relief in the forward and forward strokes of piston 37. The gases escaping from vent 41 may be inflammable and plunger 38 extends through a receiver support 42 constructed to prevent combustion that would result from contact of these gases with burning gases escaping from drum 18.

An actuator 44, slidable on receiver 14, is biased into engagement with plunger 38 by springs 46 engaging a rear wall 48 of receiver 14. The actuator engages index rollers 22 to successively rotate chambers 26 to the firing position of the drum as piston 37 operates responsive to gases from the discharge of cartridges in the firing position.

A firing pin 50, slidable in receiver 14, includes a point 52 and an offset extension 54. Point 52 is adapted for normal position projection into the case of cartridge 26 to impinge on the primer thereof and discharge the cartridge. A spring 56 extends into a cavity 58 in extension 54 and is held in position by a pin 60 projecting through a slot 61 in extension 54.

Drum 18 remains rotationally fixed during the first substantially two inches of rearward actuator travel and during an equal period of the end of forward travel of actuator 44. During the rearward fixed period, a retractor cam 62, pivoted on pin 63 in receiver 14, is rotated by a wedge surface 64 of actuator 44 to urge firing pin 50 rearwardly and withdraw point 52 from the case of cartridge 26. Cam 62 is biased towards surface 64 by a spring 65.

As actuator 44 continues rearwardly, a shoulder 66 thereof engages a lug 68 of extension 54 to compress firing spring 56 and cock firing pin 50.

Trigger and automatic sears 70 and 72 include fingers 74 and 76 for respective engagement with catches 78 and 80 of extension 54. Trigger sear 70 and lever 82 are pivoted on receiver 14 by means of a pin 84.

A pin stop 86 and cooperating projection 87 are respectively provided on trigger sear 70 and lever 82 to restrict
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relative motion therebetween. A receiver detent 88 restricts rotation of trigger sear 70. A compression spring 89 is disposed between sear 70 and lever 82 to bias sear 70 towards engagement of trigger 74 and catch 78 and to maintain such engagement. An end 90 of lever 82, opposite projection 87 is engageable by extension 52 of the end portion of the rearward stroke of actuator 44 to provide an additional force to rotate finger 74 into engagement with catch 78. For automatic fire, trigger 70 is manually rotated against spring 89 to prevent such engagement.

Automatic sear 72 is pivoted on a pin 93 in receiver 14 and biased therefrom by a spring 94 and a cooperating follower 96 to urge finger 76 towards engagement with catch 80. A release 100 pivoted at 102 in receiver 14 includes a ramped cam 103 for projecting beneath a portion 104 of sear 72. Flat surface 106 of the cam in engagement with portion 104 allows spring 94 to pivot finger 76 into engagement with catch 80. As actuator 44 slides into battery position, a release pin 108 thereof engages surface 110 of release 100 to pivot the release and wedge angled surface 112 under portion 104 to withdraw finger 76 from catch 80. When finger 76 is withdrawn, firing pin 50 moves forwardly responsive to spring 56 to fire the cartridge. In the rearward stroke of actuator 44, pin 108 engages release surface 114 to return surface 106 to contact with portion 104.

While the foregoing is a description of the preferred embodiment, the following claims are intended to include those modifications and variations that are within the spirit and scope of my invention.

I claim:

1. A revolver-type automatic weapon comprising a receiver, a recoil unit including a barrel slidably disposed on said receiver, a drum including cartridge chambers rotatably disposed on said recoil unit, an actuator slidable in rearward and forward strokes for indexing said chambers to a firing position aligned with said barrel and a trigger responsive device for discharging a cartridge chambered in the firing position including a firing pin biased to a position of percussive engagement with the primer of the cartridge and slideable to a cocked position responsive to said rearward actuator stroke, an automatic sear pivoted on the receiver and spring-biased to a position of engagement to retain said firing pin in said cocked position, and means for rotating said automatic sear from said engagement position responsive to said forward actuator stroke.

2. In a revolver-type automatic weapon including a receiver, a recoil unit including a barrel slidably disposed on the receiver, a drum including cartridge chambers rotatably disposed on the recoil unit, and an exhaust gas-operated actuator for successively conveying the chambers to a firing position aligned with the barrel biased to a battery position and slideable in rearward and forward strokes, a device for discharging a cartridge chambered in the firing position comprising a firing pin biased to a position of percussive engagement with the primer of the cartridge and slideable to a cocked position responsive to the rearward actuator stroke, a trigger sear and an automatic sear pivoted on the receiver and spring-biased to respective positions of engagement to retain said firing pin in said cocked position, and means for rotating said automatic sear from said engagement position responsive to movement of the actuator to the battery position to release said firing pin.

3. In a revolver-type automatic weapon including a receiver, a recoil unit provided with a barrel slidably disposed on the receiver, a drum with cartridge chambers and rotatably disposed on the recoil unit, and an actuator for indexing the chambers to a firing position aligned with the barrel biased to a battery position and slidably disposed with respect to the recoil unit for operation in successive rearward and forward strokes responsive to discharge of a cartridge chambered in the firing position, a device for discharging the cartridge comprising a firing pin having disposed on a discharge position for percussive engagement of said cartridge with the primer of the cartridge and disposed for slideable operation to a cocked position responsive to the rearward actuator stroke, a trigger sear and an automatic sear pivotable on the receiver and spring-biased to respectively retain said firing pin in said cocked position, a release pin secured to the actuator, and a release pivotally disposed on the receiver for engagement between said automatic sear and said release pin as the actuator returns to battery position to rotate said automatic sear and release said firing pin.

4. In a revolver-type automatic weapon including a receiver, a recoil unit provided with a barrel and slidably disposed on the receiver, a drum provided with cartridge chambers and rotatably disposed on the recoil unit and an actuator for successively conveying the chambers to a firing position aligned with the barrel, biased to a battery position and slideable in successive rearward and forward strokes responsive to discharges of the weapon, a device for discharging a cartridge chambered in the firing position comprising a firing pin for discharge position projection into the case of the cartridge to percussively imparting energy on the primer thereof, a spring for biasing said firing pin to said discharge position, and a trigger sear, an automatic sear, a release and a retractor cam pivoted on the receiver, said retractor cam and said firing pin being adapted for successive rearward stroke engagement with the actuator for withdrawing said firing pin from the case and for displacing said firing pin to a cocked position with said spring compressed, said sears being biased to positions for retaining said firing pin in said cocked position, said trigger sear being disposed for manual rotation, and said release being constructed to rotate said automatic sear from said retaining position responsive to the forward actuator stroke.

5. In a revolver-type automatic weapon including a receiver, a recoil unit provided with a barrel slidably disposed on the receiver, a drum including cartridge chambers rotatably disposed on the recoil unit, an actuator biased to a battery position and disposed for rearward and slideable operation with respect to the recoil unit responsive to discharge of the weapon to index the chambers to a firing station, a firing pin spring-biased to a position for percussive engagement with a cartridge chambered in the firing position for discharge thereof, and means disposed for slideable operation to a cocked position responsive to the rearward operation, and an automatic sear pivoted on the receiver and spring-biased to retain the firing pin in the cocked position, a sear release mechanism comprising a release pin secured to the actuator and a bar for engagement with said pin pivoted on the receiver and provided with a cam portion to rotate said automatic sear out of engagement with said firing pin responsive to the rearward operation.

6. In a revolver-type automatic weapon including a receiver, a recoil unit provided with a barrel slidably disposed on the receiver, and a drum with cartridge chambers disposed on the recoil unit for rotation to a firing station of the chambers for axial alignment thereof with the barrel, a firing mechanism comprising a firing pin in the receiver disposed to slide between cocked, retracted and firing positions and biased to said firing position for engagement with the primers of percussion-fired cartridges chambered in said firing station for discharge thereof, a cam device pivoted on the receiver, and an actuator slideable thereon for interrupted engagement with said cam unit to displace said firing pin to said retracted position and for engagement with said firing pin for displacement thereof to said cocked position responsive to said discharge.

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