FIREPOINT WITH BOTH GAS DELAYED AND STROKE PISTON ACTION

BACKGROUND

The principles of gas-operated reloading and gas-delayed blowback are well-documented in the area of automatic and semi-automatic firearms. Implementing these principles often requires elaborate locking mechanisms, including the use of lugs, levers, and rollers. Additionally, propellant gas resulting from the firing of a bullet is involved either in extracting an empty cartridge from the firearm or in delaying the extraction of an empty cartridge, but not both.

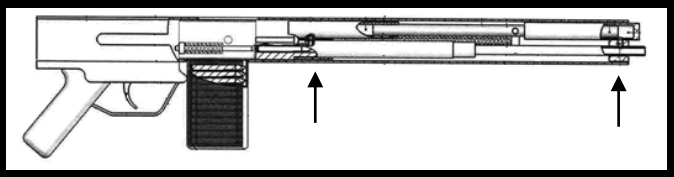
SOLUTION

Researchers at the U. S. Army Combat Capabilities Development Command Aviation & Missile Center created a novel dual-stroke firearm design, combining the principles of gas-operated reloading and gas delayed blowback. This allows for the firearm to fully harness the power associated with propellant gas. CCDC Aviation and Missile Center's elegant solution has the potential to increase reliability of automatic and semi-automatic firearms while at the same time reducing manufacturing costs.

The invention is a firearm action method combining the principles of gas delay and the principles of stroke piston action creating a simple and effective high powered automatic or semi-automatic firearm.

THE TECHNOLOGY

In CCDC Aviation & Missile Center's combined design, pressure from propellant gas associated with the firing of a bullet is used (1) to hold the bolt closed while the bullet is in the barrel and (2) to push the bolt rearward when the bullet has left the barrel. As shown below, the barrel of the firearm has both a rear gas port and a front gas port. This results in a dual stroke piston firearm action having a rear piston area and a front piston area. After a bullet is fired, propellant gas rushes through the rear gas port into the rear piston area. This forces the piston, which is connected to the bolt, to a forward position, delaying extraction of the cartridge. Once the bullet reaches the front of the barrel, propellant gas rushes through the front gas port and fills the front piston area. The front gas port is larger in size than the rear gas port. Consequently, the rearward pressure on the piston is greater than the forward pressure, pushing the bolt backwards and facilitating extraction of the empty cartridge.



This figure illustrates the placement of the front and rear gas ports for the dual-stroke firearm design.

APPLICATIONS

The technology has several potential applications:

- Firearms Design
- Defense

PUBLICATIONS

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FOR FURTHER INFORMATION:

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