ABSTRACT
A firing mechanism of an airsoft gun includes a canister of propellant having an outlet member. The firing mechanism includes a pivotal follower engaged with a trigger; and a valve assembly including a spring biased sliding rod urging against the follower, an O-ring put on the sliding rod for blocking the outlet member, a well on the sliding rod, a chamber having an outlet element, a passage interconnecting the outlet member and the chamber, and a ball seated on the outlet element for blocking the chamber; a channel in communication with the chamber; and a spring biased stopper for closing a forward end of the channel. In response to pulling the trigger, the pivotal follower rotates to move the sliding member rearward so that propellant supplied by the canister may push a projectile out of the airsoft gun.
FIRING MECHANISM OF AIRSOFT GUN

BACKGROUND OF THE INVENTION

[0001] 1. Field of the Invention

[0002] The invention relates to airsoft guns and more particularly to a firing mechanism of an airsoft gun (e.g., air pistol) having improved characteristics.

[0003] 2. Description of Related Art

[0004] There is a conventional projectile launcher comprising a firing mechanism having a first portion and a second portion in sealed, sliding engagement with each other and cooperating to define an air chamber, the first portion configured to move to a cocked position by a slide, a biasing member urging the first portion away from the cocked position. The movement of the first portion from the cocked position under the biasing force of the biasing member reduces a volume of the air chamber to create a burst of air capable of launching a projectile from the barrel. The second portion moves with movement of the slide toward the cocked position such that the loading member unblocks the opening of the reservoir to permit a projectile to move from the reservoir through the opening to the barrel.

[0005] While the device enjoys its success in the market, continuing improvements in the exploitation of firing mechanism of airsoft gun of this type are constantly sought.

SUMMARY OF THE INVENTION

[0006] It is therefore one object of the invention to provide a firing mechanism of an airsoft gun including a canister of propellant having an outlet member, comprising a trigger, a pivot follower operatively engaged with the trigger; and a valve assembly including a spring biased sliding rod urging against the pivot follower, a main O-ring put on the sliding rod for blocking the outlet member, a well formed on the sliding rod, a chamber adjacent to the well, a passage interconnecting the outlet member and the chamber, an outlet element on the chamber, and a ball seated on the outlet element for blocking the chamber; a channel in communication with the chamber; and a spring biased stopper for closing off a forward end of the channel; wherein in response to pulling the trigger, the pivot follower rotates to move the sliding member rearward, move the main O-ring out of the outlet member, and move the well rearward to receive a portion of the ball to unblock the outlet element so that propellant supplied by the canister of propellant is configured to leave out of the outlet member to enter the chamber via the passage; the pressurized gas further flows out of the outlet element into the channel; and the pressurized gas leaves the channel by pushing the spring biased stopper.

[0007] The above and other objects, features and advantages of the invention will become apparent from the following detailed description taken with the accompanying drawings.

BRIEF DESCRIPTION OF THE DRAWINGS

[0008] FIG. 1 is a perspective view of an air pistol according to the invention;

[0009] FIG. 2 is a perspective view of intermediate and rear portions of the air pistol with a portion of the body removed to show a firing mechanism and associated components;

[0010] FIG. 3 is a side elevation in part section of the air pistol with a portion of the body removed to show the firing mechanism and other components;

[0011] FIG. 4 is an enlarged view of the top right portion of FIG. 3 showing propellant being supplied from a canister of propellant to the firing mechanism;

[0012] FIG. 5 is a view similar to FIG. 4 showing a trigger pulling operation;

[0013] FIG. 6 is a view similar to FIG. 5 showing a projectile being pushed into the barrel by the propellant; and

[0014] FIG. 7 is a view similar to FIG. 4 showing a next projectile being pushed to a ready to fire position and the trigger clockwise rotated to its inoperative position after the firing.

DETAILED DESCRIPTION OF THE INVENTION

[0015] Referring to FIGS. 1 to 7, an airsoft gun (e.g., air pistol) in accordance with the invention comprises the following components as discussed in detail below.

[0016] A body 1 has a barrel portion and a grip portion. A trigger 11 is adjacent to the grip portion. A pivot follower 12 is operatively engaged with the trigger 11. A canister 10 of propellant (e.g., compressed gas) is provided in the grip portion. An outlet member 13 is provided downstream of a flow path of the compressed gas leaving the canister 10. A valve assembly 2 is provided in a rear portion of the body 1 and includes a sliding rod 20 urged by a torsion spring 19 in the body 1 against the pivot follower 12, a main O-ring 21 put on a recess 22 of the sliding rod 20 for blocking the outlet member 13 when the trigger 11 is not pulled, a half-spherical well 27 disposed rearward of the recess 22, a chamber 24 adjacent to the well 27, a passage 23 interconnecting the outlet member 13 and the chamber 24, an outlet element 25 on the opening of the chamber 24, a ball 26 seated on the outlet element 25 and proximate to an edge of the well 27, a forward O-ring 28A put on the sliding rod 20, a rear O-ring 28B put on the sliding rod 20, and a spring biased stopper 29 for closing off a forward end of a channel 30 which communicates with the chamber 24. An intermediate O-ring 18 is put on the sliding rod 20 between the main O-ring 21 and the well 27.

[0017] In response to pulling the trigger 11, the pivot follower 12 clockwise rotates to move the sliding member 20 rearward with the torsion spring 19 further compressed. And in turn, the main O-ring 21 slightly clears out of the outlet member 13. Thus, pressurized gas supplied by the air canister 10 leave the outlet member 13 to enter the chamber 24 via the passage 23. Also, the well 27 moves rearward to receive a portion of the ball 26 to unblock the outlet element 25. Then the pressurized gas flows out of the chamber 24 into the channel 30. And in turn, the pressurized gas leaves the channel 30 by pushing the stopper 29 forward. And in turn, the forward moving stopper 29 pushes a projectile (e.g., paintball) 3 into the barrel portion. Finally, the projectile 3 is launched.

[0018] As shown in FIG. 7 specifically, after releasing the trigger 11, the trigger 11 rotates clockwise. And in turn, the pivot follower 12 rotates counterclockwise, the sliding rod 20 moves forward due to expansion of the torsion spring 19, the well 27 disengages from the ball 26, the main O-ring 21 moves to block the outlet member 13, the stopper 29 moves rearward to block the forward end of the channel 30, and a next projectile 3 is pushed to a ready-to-fire position.

[0019] While the invention has been described in terms of preferred embodiments, those skilled in the art will recognize...
that the invention can be practiced with modifications within the spirit and scope of the appended claims.

What is claimed is:

1. A firing mechanism of an airsoft gun including a canister of propellant having an outlet member, comprising:
   a trigger;
   a pivotal follower operatively engaged with the trigger; and
   a valve assembly including a spring biased sliding rod urging against the pivotal follower, a main O-ring put on the sliding rod for blocking the outlet member, a well formed on the sliding rod, a chamber having an outlet element, a passage interconnecting the outlet member and the chamber, and a ball seated on the outlet element for blocking the chamber;
   a channel in communication with the chamber; and
   a spring biased stopper for blocking a forward end of the channel;

wherein in response to pulling the trigger, the pivotal follower rotates to move the sliding member rearward, move the main O-ring out of the outlet member, and move the well rearward to receive a portion of the ball to unblock the outlet element so that propellant supplied by the canister of propellant is configured to leave out of the outlet member to enter the chamber via the passage; the pressurized gas further flows out of the outlet element into the channel; and the pressurized gas leaves the channel by pushing the spring biased stopper forward.

* * * * *