Claims

What is claimed is:

1. A toy projectile launcher, comprising:

a housing;

a projectile holder disposed within the housing and configured to contain a plurality of projectiles;

a barrel interface section disposed at the front of the housing;

an air piston assembly disposed within the housing and including an air piston barrel having an air nozzle disposed on a front portion thereof, a plunger element, and a compression spring;

a cocking slide that is adapted to be moved forward and backward relative to the housing, the projectile holder and the air piston assembly being coupled to the cocking slide; and

a first detachable launch barrel that is adapted to (i) engage and attach to the barrel interface section; and (ii) disengage and detach from the barrel interface section;

wherein, when the cocking slide is moved backward from a forward position to a backward position, the air piston barrel moves backward and pushes the plunger element to compress the compression spring against the rear wall of the housing;

wherein, when the cocking slide is moved forward from the backward position to the forward position:

the air piston barrel moves forward, forming an internal air chamber between the front portion of the air piston barrel and the plunger element; and

the air nozzle moves forward to form a first airtight seal between the air piston barrel and the barrel interface section; and

wherein, when the first detachable launch barrel is attached to the barrel interface section, a second airtight seal is formed between one of the plurality of projectiles and the first detachable launch barrel.

2. The toy projectile launcher of claim 1, wherein, when the cocking slide is moved backward from a forward position to a backward position, a first projectile contained in the projectile holder is moved to a position in front of the air piston barrel.

3. The toy projectile launcher of claim 2, wherein the projectile holder includes a projectile advancement mechanism for advancing the first projectile contained in the projectile holder into the position in front of the air piston barrel.

4. The toy projectile launcher of claim 2, wherein, when the cocking slide is moved forward from the backward position to the forward position, the air nozzle pushes the first projectile into the barrel interface section into a firing position in front of the first airtight seal so as to form the second airtight seal.

5. The toy projectile launcher of claim 4,

wherein, when the first detachable launch barrel is detached from the barrel interface section, no airtight seal is formed in front of the first projectile.

6. The toy projectile launcher of claim 1,

further comprising a second detachable launch barrel having a diameter that is larger than that of the first detachable launch barrel,

wherein the second detachable launch barrel is adapted to (i) engage and attach to the barrel interface section; and (ii) disengage and detach from the barrel interface section; and

wherein, when the second detachable launch barrel is attached to the barrel interface section, no airtight seal is formed between the air nozzle and the second detachable launch barrel when the cocking slide is moved forward from the backward position to the forward position.

7. The toy projectile launcher of claim 6,

wherein the first detachable launch barrel has a first inside diameter and the second detachable launch barrel has a second inside diameter, and

wherein the first inside diameter is less than the inside second diameter.

8. The toy projectile launcher of claim 4,

further comprising a latching assembly coupled between the plunger element and a trigger assembly, wherein the trigger assembly is adapted to be pulled backward by a user of the toy projectile launcher.

9. The toy projectile launcher of claim 8,

wherein the plunger element is pushed forward by the compression spring to expel air from the internal air chamber through the air nozzle behind the first projectile in the firing position when the coupling of the latching assembly between the plunger element and the trigger assembly is released.

10. The toy projectile launcher of claim 4,

wherein, when the first projectile is in the firing position, the air nozzle is immediately adjacent to the first projectile.

11. The toy projectile launcher of claim 4,

wherein the housing is configured as a pistol, and

wherein the projectile holder is disposed within a handle of the housing,

12. The toy projectile launcher of claim 11,

wherein, when the cocking slide is moved backward from the forward position to the backward position, the first projectile is lifted from the projectile holder disposed within the handle into the position in front of the air piston assembly.

13. The toy projectile launcher of claim 4,

wherein the projectile holder is a rotatable storage drum, and

wherein, when the cocking slide is moved backward from the forward position to the backward position, the projectile holder rotates to place the first projectile into the position in front of the air piston assembly.

14. The toy projectile launcher of claim 13,

wherein the projectile holder includes a plurality of resilient projectile stoppers that each abut a portion of a respective projectile loaded in the projectile holder.

15. The toy projectile launcher of claim 14,

wherein each of the resilient projectile stoppers includes a surface disposed to face and be pushed by the air nozzle when the air piston barrel is pushed forward when the cocking slide is moved from the backward position to the forward position.

16. The toy projectile launcher of claim 15, wherein each resilient projectile stopper, when pushed by the air nozzle, flexes outward to make way for the air nozzle to extend through the projectile holder.

17. The toy projectile launcher of claim 1,

wherein the projectiles are foam darts.

18. A toy projectile launcher, comprising:

a housing;

a projectile holder disposed within the housing and configured to contain a plurality of projectiles;

a barrel interface section disposed at the front of the housing;

an air piston assembly disposed within the housing and including an air piston barrel having an air nozzle disposed on a front portion thereof, a plunger element, and a compression spring;

a cocking slide that is adapted to be moved forward and backward relative to the housing, the projectile holder and the air piston assembly being coupled to the cocking slide;

a latching assembly coupled between the plunger element and a trigger assembly, wherein the trigger assembly is adapted to be pulled backward by a user of the toy projectile launcher; and

a first detachable launch barrel that is adapted to (i) engage and attach to the barrel interface section; and (ii) disengage and detach from the barrel interface section;

wherein, when the cocking slide is moved backward from a forward position to a backward position:

the air piston barrel moves backward and pushes the plunger element to compress the compression spring against the rear wall of the housing; and

a first projectile contained in the projectile holder is moved to a position in front of the air piston barrel;

wherein, when the cocking slide is moved forward from the backward position to the forward position:

the air piston barrel moves forward, forming an internal air chamber between the front portion of the air piston barrel and the plunger element; and

the air nozzle moves forward to form a first airtight seal between the air piston barrel and the barrel interface section with the first projectile disposed between the air piston barrel and the barrel interface section;

wherein, when the first detachable launch barrel is attached to the barrel interface section:

a second airtight seal is formed between the front of the first projectile and the first detachable launch barrel; and

the air nozzle pushes the first projectile into the barrel interface section into a firing position in front of the first airtight seal so as to form the second airtight seal; and

wherein the plunger element is pushed forward by the compression spring to expel air from the internal air chamber through the air nozzle behind the first projectile in the firing position when the coupling of the latching assembly between the plunger element and the trigger assembly is released.