TITLE

[0001] Button Actuated Autoinjector

TECHNICAL FIELD

[0002] The present disclosure generally relates to button actuated autoinjectors, and in some embodiments, button actuated triggering devices for the delivery of large volumes of medicament for sub skin surface penetration.

SUMMARY

[0003] In certain embodiments, an injector comprises: a housing having a proximal end and a distal end extending along a longitudinal axis; a medicament container containing a volume of a medicament; a button having a button body, a button aperture extending through the button body, and a fin extending distally from a proximal end of the button body coupled to the housing, the button rotatable about the longitudinal axis between a locked position and an unlocked position and movable along the longitudinal axis between a pre-firing position and a firing position; a latch having a latch body, a crown defined on a proximal end of the latch body configured to engage the fin of the button, and an engagement feature extending from the latch body, the engagement feature movable between an engaged position and a disengaged position at least partially disposed within the button; a ram movable relative to the latch; and an energy source configured to urge the ram distally along the longitudinal axis. In certain embodiments, the ram is prevented from moving relative to the latch by the button in the pre-firing position. In certain embodiments, rotation of the button into the unlocked position aligns the button aperture with the engagement feature. In certain embodiments, rotation of the button to the unlocked position and movement of the button distally along the longitudinal axis relative to the housing into the firing position allows the ram to move relative to the latch.

[0003a] In certain embodiments, an injector comprising: a housing having a proximal end and a distal end extending along a longitudinal axis; a medicament container having a luer lock extending from a distal end thereof and containing a volume of a medicament; a button coupled to the housing, the button rotatable about the longitudinal axis between a locked position and an unlocked position and movable along the longitudinal axis between a pre-firing position and a firing position; a latch at least partially disposed within the button; a ram movable relative to the latch; a plunger disposed within the medicament container; and an energy source configured to urge the ram distally along the longitudinal axis. In certain embodiments, the ram is prevented from moving relative to

the latch by the button in the pre-firing position. In certain embodiments rotation of the button to the unlocked position and movement of the button distally along the longitudinal axis relative to the housing into the firing position allows the ram to move relative to the latch.

[0003b] In certain embodiments, an injector comprising: a housing having a proximal end and a distal end extending along a longitudinal axis; a medicament container containing a volume of a medicament, the medicament container fixed relative to the housing; a button coupled to the housing, the button rotatable about the longitudinal axis between a locked position and an unlocked position and movable along the longitudinal axis between a pre-firing position and a firing position; a latch at least partially disposed within the button, the latch fixed relative to the housing; a ram movable relative to the latch; and an energy source configured to urge the ram distally along the longitudinal axis. In certain embodiments, the ram is prevented from moving relative to the latch by the button in the pre-firing position. In certain embodiments, rotation of the button to the unlocked position and movement of the button distally along the longitudinal axis relative to the housing into the firing position allows the ram to move relative to the latch.

[0004] In certain embodiments, the button includes a button body, a button aperture extending through the button body, and a fin extending distally from a proximal end of the button body. In certain embodiments, the latch includes a latch body, a crown defined on a proximal end of the latch body configured to engage the fin of the button, and an engagement feature extending from the latch body, the engagement feature movable between an engaged position and a disengaged position. In certain embodiments, at least a portion of the fin engages the crown when the button is in the locked position and in the unlocked position.

[0005] In certain embodiments, the ram includes a ram body, and a ram aperture extending through the ram body, the ram aperture configured to receive at least a portion of the engagement feature when the button is in the pre-firing position. In certain embodiments, the engagement feature comprises: a flexible arm extending along the longitudinal axis; and a protrusion extending radially therefrom. In certain embodiments, the protrusion extends radially inward from an end of the flexible arm. In certain embodiments, rotation of the button into the unlocked position aligns the button aperture with the engagement feature. In certain embodiments, distal movement of the button into the

CLAIMS

What is claimed is:

1. An injector comprising:

a housing having a proximal end and a distal end extending along a longitudinal axis;

a medicament container containing a volume of a medicament;

a button having a button body, a button aperture extending through the button body, and a fin extending distally from a proximal end of the button body coupled to the housing, the button rotatable about the longitudinal axis between a locked position and an unlocked position and movable along the longitudinal axis between a pre-firing position and a firing position;

a latch having a latch body, a crown defined on a proximal end of the latch body configured to engage the fin of the button, and an engagement feature extending from the latch body, the engagement feature movable between an engaged position and a disengaged position at least partially disposed within the button;

a ram movable relative to the latch; and

an energy source configured to urge the ram distally along the longitudinal axis,

wherein the ram is prevented from moving relative to the latch by the button in the pre-firing position,

wherein rotation of the button into the unlocked position aligns the button aperture with the engagement feature, and

wherein rotation of the button to the unlocked position and movement of the button distally along the longitudinal axis relative to the housing into the firing position allows the ram to move relative to the latch.

2. The injector of claim 1, wherein at least a portion of the fin engages the crown when the button is in the locked position and in the unlocked position.

3. The injector of claim 1, wherein the ram includes a ram body, and

a ram aperture extending through the ram body, the ram aperture configured to receive at least a portion of the engagement feature when the button is in the pre-firing position.

4. The injector of claim 1, wherein the engagement feature comprises:
a flexible arm extending along the longitudinal axis; and
a protrusion extending radially therefrom.

5. The injector of claim 4, wherein the protrusion extends radially inward from an end of the flexible arm.

6. The injector of claim 1, wherein distal movement of the button into the firing position allows the engagement feature to flex radially outward and extend at least partially through the button aperture.

7. The injector of claim 1, wherein the medicament container includes a luer lock extending from a distal end thereof, the injector further comprising:
a plunger disposed within the medicament container.

8. The injector of claim 7, wherein the ram engages the plunger thereby moving the plunger relative to the medicament container when the button is moved into the firing position.

9. The injector of claim 8, wherein movement of the plunger relative to the medicament container ejects the volume of the medicament from the medicament container through the luer lock.

10. The injector of claim 7 further comprising:
a needle coupled to the luer lock, the needle in fluid communication with the medicament container.

11. The injector of claim 7 further comprising:
a luer cap removably coupled to the luer lock in a storage configuration,
wherein the luer cap is fully recessed within the housing.

12. The injector of claim 1, wherein the button is prevented from moving proximally relative to the housing after the button is moved from the pre-firing position to the firing position.

13. The injector of claim 1, wherein the volume of the medicament is at least 10 mL.

14. The injector of claim 1, wherein the latch is fixed relative to the housing, and wherein the medicament container is fixed relative to the housing.

15. An injector comprising:
a housing having a proximal end and a distal end extending along a longitudinal axis;
a medicament container having a luer lock extending from a distal end thereof and containing a volume of a medicament;
a button coupled to the housing, the button rotatable about the longitudinal axis between a locked position and an unlocked position and movable along the longitudinal axis between a pre-firing position and a firing position;
a latch at least partially disposed within the button;
a ram movable relative to the latch;
a plunger disposed within the medicament container; and
an energy source configured to urge the ram distally along the longitudinal axis,
wherein the ram is prevented from moving relative to the latch by the button in the pre-firing position, and
wherein rotation of the button to the unlocked position and movement of the button distally along the longitudinal axis relative to the housing into the firing position allows the ram to move relative to the latch.

16. The injector of claim 15, wherein the ram engages the plunger thereby moving the plunger relative to the medicament container when the button is moved into the firing position.

17. The injector of claim 16, wherein movement of the plunger relative to the medicament container ejects the volume of the medicament from the medicament container through the luer lock.

18. The injector of claim 15 further comprising:
a needle coupled to the luer lock, the needle in fluid communication with the medicament container.

19. The injector of claim 15 further comprising:
a luer cap removably coupled to the luer lock in a storage configuration,
wherein the luer cap is fully recessed within the housing.

20. An injector comprising:
a housing having a proximal end and a distal end extending along a longitudinal axis;
a medicament container containing a volume of a medicament, the medicament container fixed relative to the housing;
a button coupled to the housing, the button rotatable about the longitudinal axis between a locked position and an unlocked position and movable along the longitudinal axis between a pre-firing position and a firing position;
a latch at least partially disposed within the button, the latch fixed relative to the housing;
a ram movable relative to the latch; and
an energy source configured to urge the ram distally along the longitudinal axis,
wherein the ram is prevented from moving relative to the latch by the button in the pre-firing position, and
wherein rotation of the button to the unlocked position and movement of the button distally along the longitudinal axis relative to the housing into the firing position allows the ram to move relative to the latch.