

~~THE INVENTION CLAIMED IS~~ Claims

1. A controlled delivery syringe device comprising:
a syringe barrel having a proximal end and distal end and defining a chamber therein, the chamber configured for containing an injectable material;
a plunger rod associated with the syringe barrel;
a plunger secured to the plunger rod and axially movable within the syringe barrel;
a plurality of equally and sequentially spaced periodic features associated with at least a portion of the plunger rod;
a counter member engageable with the periodic features,
wherein application of a distally directed force to the plunger rod results in disengagement and reengagement of the counter member with the sequentially spaced periodic features on the plunger rod, enabling advancement of the plunger rod and plunger in the syringe barrel while providing tactile feedback of dose progression of the injectable material; ~~and~~

wherein the counter member comprises a pair of oppositely disposed tabs, each of the tabs including an engagement end and a finger press end and wherein the engagement end engages the periodic features, and

wherein the oppositely disposed tabs are configured to pivot upon the application of a squeezing force to the finger press ends of the tabs, causing the engagement end of the tabs to disengage from the periodic features, enabling retraction or advancement of the plunger rod and plunger in the syringe barrel.~~a finger press end associated with the counter member, wherein application of a force to the finger press end enables retraction of the plunger.~~

2. The device of claim 1, wherein the plunger rod includes a thumb press located at a proximal end of the plunger rod to receive the application of the distally directed force to the plunger rod and wherein the periodic features are tapered to apply an outwardly directed force to the counter member resulting in disengagement and reengagement of the counter member with the sequentially spaced periodic feature on the plunger rod.

~~3. The device of claim 1, wherein the counter member comprises at least one tab having an engagement end and wherein application of the force to the finger press end causes the at least one tab to pivot, resulting in disengagement and reengagement of the counter~~

~~member with the sequentially spaced periodic feature on the plunger rod enabling retraction of the plunger rod and plunger within the syringe barrel.~~

~~4. The device of claim 3, wherein the counter member comprises the engagement end of the at least one tab and wherein the engagement end engages the periodic features.~~

35. The device of claim 1, wherein the periodic features are provided on oppositely disposed sides of the plunger rod.

~~6. The device of claim 5, wherein the counter member comprises a pair of oppositely disposed tabs, each of the tabs including an engagement end and a finger press end and wherein the engagement end engages the periodic features.~~

~~7. The device of claim 6, wherein the oppositely disposed tabs are configured to pivot upon the application of a squeezing force to the finger press ends of the tabs, causing the engagement end of the tabs to disengage from the periodic features, enabling retraction or advancement of the plunger rod and plunger in the syringe barrel.~~

48. The device of claim 1, wherein the counter member comprises a collar configured for clamping about a proximal end of the syringe barrel.

59. The device of claim 84, wherein the collar of the counter member comprises a plurality of separable components capable of being permanently secured about a flange of the syringe barrel, such that the collar of the counter member overhangs a rear opening of the syringe barrel.

106. The device of claim 1, wherein the periodic features are configured to prevent inadvertent removal of the plunger rod out of the syringe barrel.

117. A method of retrofitting a syringe ~~with a device~~ for injecting a metered dose of injectable material comprising:

providing a syringe barrel having a proximal end and distal end defining a chamber therein, the chamber configured for containing an injectable material;

providing a plunger rod having a proximal end and a distal end and a plunger secured to the distal end thereof, the plunger rod further including a plurality of equally and sequentially spaced periodic features located thereon;

associating the plunger rod and plunger with the syringe barrel such that the plunger is axially movable within the syringe barrel;

securing a counter member onto a proximal end of the syringe barrel, the counter member including a pair of oppositely disposed tabs, each of the tabs including an engagement end and a finger press end, wherein the engagement end engages the periodic features~~a finger press end and at least one tab, the at least one tab associated with the periodic features on the plunger rod;~~

wherein application of a distally directed force to the plunger rod results in disengagement and reengagement of the counter member with a plurality of sequentially spaced periodic features on the plunger rod, enabling advancement of the plunger rod and plunger in the syringe barrel while providing tactile feedback of dose progression of the injectable material and

wherein application of a force to the finger press end enables retraction of the plunger; and

wherein the oppositely disposed tabs are configured to pivot upon the application of a squeezing force to the finger press ends of the tabs, causing the engagement end of the tabs to disengage from the periodic features, enabling retraction of the plunger rod and plunger in the syringe barrel.

~~128.~~ The method of claim ~~117~~, wherein the plunger rod includes a thumb press located at a proximal end of the plunger rod to receive application of the distally directed force to the plunger rod and wherein the periodic features are tapered to apply an outwardly directed force to the counter member resulting in disengagement and reengagement of the counter member with the sequentially spaced periodic features on the plunger rod.

~~13.—The method of claim 11, wherein application of the force to the finger press end causes the at least one tab to pivot resulting in disengagement and reengagement of the counter member with the sequentially spaced periodic features on the plunger rod enabling retraction of the plunger rod and plunger within the syringe barrel.~~

~~149.~~ The method of claim ~~117~~, wherein the periodic features are provided on oppositely disposed sides of the plunger rod~~and the counter member comprises a pair of oppositely disposed tabs, each of the tabs including an engagement end and a finger press end and wherein the engagement end engages the periodic features.~~

~~15.—The method of claim 11, wherein the oppositely disposed tabs are configured to pivot upon the application of a squeezing force to the finger press ends of the tabs, causing the engagement end of the tabs to disengage from the periodic features, enabling retraction of the plunger rod and plunger in the syringe barrel.~~

~~1610.~~ The method of claim ~~117~~, wherein the counter member comprises a collar configured for clamping about a proximal end of the syringe barrel.

~~1711.~~ The method of claim ~~1610~~, wherein the collar of the counter member comprises a plurality of separable components and wherein the method of retrofitting the syringe includes permanently securing the separable components about a flange of the syringe barrel, such that the collar of the counter member overhangs a rear opening of the syringe barrel.