

CLAIMS

What is claimed is:

1. An attachment for a syringe, the syringe comprising a syringe body and a plunger, the attachment comprising:
 - a main body having a plunger engaging end adapted to engage the plunger; and
 - an assist feature cooperatively associated with the main body and having a rolling element adapted to rotate relative to the attachment main body and to cooperate with the syringe body, whereby rotation of the rolling element causes movement of the attachment and the plunger relative to the syringe body.
2. The attachment of claim 1, wherein the assist feature rolling element includes at least one attachment toothed component adapted to engage at least one syringe body toothed component on the syringe body.
3. The attachment of claim 2, wherein the at least one attachment toothed component is a pinion gear on the rolling element.
4. The attachment of claim 2, wherein the at least one syringe body toothed component comprises at least one toothed rack extending axially along the syringe body.
5. The attachment of claim 1, wherein the rolling element provides a mechanical advantage for moving the attachment main body relative to the syringe body.
6. The attachment of claim 3, wherein the rolling element has an outer contact surface and wherein the outer contact surface is a radial distance from the axis of rotation of the rolling element that is greater than the pitch radius of the pinion gear.
7. The attachment of claim 4, wherein the at least one toothed rack is formed integrally with the syringe body.
8. The attachment of claim 1, wherein the attachment main body further comprises a guide end for receiving the syringe body movably supporting the attachment relative to the syringe body.

9. The attachment of claim 8, wherein the guide end includes a pair of laterally extending guide extensions for engaging the syringe body.

10. The attachment of claim 1, wherein the attachment main body includes a viewing window formed therein for permitting a user to view the syringe body when the attachment is installed thereon.

11. A system for operating a syringe comprising:

a syringe comprising a syringe body and a plunger;

an attachment comprising a main body having a plunger engaging end adapted to engage the plunger and an assist feature cooperatively associated with the main body and having a rolling element adapted to rotate relative to the attachment main body and to cooperate with the syringe body, whereby rotation of the rolling element causes movement of the attachment and the plunger relative to the syringe body.

12. The system of claim 11, wherein the assist feature rolling element includes at least one attachment toothed component adapted to engage at least one syringe body toothed component on the syringe body.

13. The system of claim 12, wherein the at least one attachment toothed component is a pinion gear on the rolling element.

14. The system of claim 2, wherein the at least one syringe body toothed component comprises at least one toothed rack extending axially along the syringe body.

15. The system of claim 1, wherein the syringe body has a flat surface and wherein the attachment includes at least one guide rail for guiding the attachment along the flat surface.

16. The system of claim 1, wherein the attachment main body includes a viewing window formed therein for permitting a user to view the flat surface of the syringe body.

17. A system for operating a syringe comprising:

a syringe comprising a syringe body and a plunger, the syringe body having an axially extending flat surface;

an attachment comprising:

a main body having a plunger engaging end adapted to engage the plunger and a guide end adapted to receive and support the attachment for sliding movement on the syringe body;

a thumb-engaging projection for permitting a user to apply force to the attachment to cause relative axial movement relative to the syringe body;

a viewing window formed in the main body for allowing a user to view the syringe flat surface; and

a pair of guide rails on the main body for supporting the attachment for sliding movement on the syringe flat surface.

18. The attachment of claim 17, wherein the attachment further comprises at least one guiding projection disposed near the thumb-engaging projection for supporting the attachment for sliding movement on the syringe body flat surface.

19. The system of claim 17, further comprising a tactile indicator for generating a tactile event to the user as the main body moves relative to the syringe body.

20. The attachment of claim 17, wherein the attachment main body guide end includes a U-shaped extension for receiving the syringe body.