

WHAT IS CLAIMED IS:

1. A delivery device comprising:
a retainer ring;
a cap; and
a spring, disposed between the retainer ring and the cap, the retainer ring and the cap structured to capture opposing ends of the spring such that the spring is retained by the retainer ring and the cap and the cap, spring, and retainer ring form an integral assembly.
2. The delivery device of claim 1, wherein the cap includes a plurality of dependent engagement structures positioned to lockingly engage a plunger of a syringe.
3. The delivery device of claim 2, wherein the plurality of dependent engagement structures includes a post, configured to extend into and engage the plunger of the syringe, wherein the post is formed integrally with the cap.
4. The delivery device of claim 3, wherein the post extends along an axis of the spring towards the retainer ring and is disposed concentrically within the spring.
5. The delivery device of claim 2, wherein the plurality of dependent engagement structures includes a plurality of latch arms, the plurality of latch arms formed integrally with the cap and adapted to securely engage a plunger of a syringe.
6. The delivery device of claim 5, wherein the plurality of latch arms extend from an inner surface of the cap, wherein an end of each of the plurality of latch arms includes an angled cam surface and a latching shoulder, the latching shoulder defining a latch surface opposing the inner surface of the cap, wherein the cap further includes a raised step surface projecting from the inner surface of the cap for cooperatively locking a flanged end of the plunger between the latch surface and the raised step surface.
7. The delivery device of claim 1, wherein the cap includes a plurality of inwardly extending clips sited and arranged to capture one of the opposing ends of the spring.

8. The delivery device of claim 1, wherein the retainer ring includes a plurality of inwardly extending clips sited and arranged to capture one of the opposing ends of the spring.
9. The delivery device of claim 1, wherein the spring is a compression spring, such that the spring biases the cap away from the retainer ring.
10. The delivery device of claim 1, wherein the spring has a spring constant in the range of 1 to 10 pound-force.
11. A delivery system comprising
a syringe, the syringe including a plunger and a barrel, the plunger configured to engage and translate along an inner surface of the barrel;
a powdered substance to be delivered, the powdered substance disposed within the barrel of the syringe; and
a delivery device including
a retainer ring,
a cap, and
a spring, disposed between the retainer ring and the cap, the retainer ring and the cap structured to capture opposing ends of the spring such that the spring is retained by the retainer ring and the cap,
wherein the cap includes:
a post, the post configured to extend into and engage the plunger of the syringe, and
a plurality of latch arms, the plurality of latch arms configured to extend from an inner surface of the cap, wherein an end of each of the plurality of latch arms includes an angled cam surface and a latching shoulder, the latching shoulder defining a latch surface opposing the inner surface of the cap, wherein the cap further includes a raised step surface projecting from the inner surface of the cap for cooperatively locking a flanged end of the plunger between the latch surface and the raised step surface, and
wherein the delivery device is moveable between:

a compressed position, where the cap is moved towards the retainer ring and the spring is compressed, thereby translating the plunger towards a distal end of the syringe, and
a relaxed position, where the cap is moved away from the retainer ring and the spring is relaxed, thereby translating the plunger toward a proximal end of the syringe.

12. The delivery system of claim 11, wherein the syringe barrel defines an orifice, discharge opening, or aperture at a distal end of the barrel, wherein the syringe is configured to expel a material from the orifice.
13. The delivery system of claim 12, wherein the material expelled is a biologically compatible polymer which forms a hydrogel when exposed to blood.
14. The delivery system of claim 11, wherein the barrel retains a first material adjacent to a second material.
15. The delivery device of claim 11, wherein the post extends along an axis of the spring towards the retainer ring and is disposed concentrically within the spring.
16. The delivery device of claim 11, wherein a proximal end of the plunger defines a receptacle sited and arranged to receive and engage the post.
17. The delivery device of claim 11, wherein the spring is a compression spring, such that the spring biases the cap away from the retainer ring.
18. The delivery device of claim 11, wherein the retainer ring and the cap each include a plurality of inwardly extending clips sited and arranged to capture one of the opposing ends of the spring.
19. A method of enabling use of a delivery device comprising:
enabling the coupling of a cap of a delivery device to a plunger of a syringe,
including inserting a post of the cap into a proximal end of the plunger;
enabling the depressing of the cap of the delivery device, wherein, responsive to depressing the cap,
a spring of the delivery device compresses, and

the plunger translates towards a distal end of the syringe;
enabling the releasing of the cap of the delivery device, wherein, responsive to releasing the cap,
the spring of the delivery device expands, and
the plunger translates towards a proximal end of the syringe; and
enabling the repeating of the depressing and releasing of the cap to sequentially and intermittently expel a desired amount of a material from the distal end of the syringe with each compression stroke.

20. The method of claim 19, wherein the material is a dry material.

21. A dry powder hemostat comprising dry particles of cross-linked bovine gelatin and non-crosslinked bovine gelatin, said dry particles having a particle size of between 250 and 500 μm , with a density greater than that of other hemostatic particles, said dry powder hemostat being substantially free of added thrombin, and said dry powder hemostat, when added directly to the site of a bleeding wound absorbs blood and wound exudate fluids, remains at the bottom of the wound without floating of the particles and exhibits up to a 70% swell from a dry state, and promotes hemostasis.

22. A kit comprising:
a pre-filled syringe, including dry particles of cross-linked bovine gelatin and non-crosslinked bovine gelatin; and
a delivery device, including:
a retainer ring,
a cap, and
a spring, disposed between the retainer ring and the cap,
wherein the delivery device is configured to be coupled to the pre-filled syringe, such that:
responsive to depressing the cap,
the spring of the delivery device compresses,
a plunger translates towards a distal end of the pre-filled syringe,
and

dry particles of cross-linked bovine gelatin and non-crosslinked bovine gelatin are expelled from the distal end of the pre-filled syringe, and responsive to releasing the cap, the spring of the delivery device expands, and the plunger translates towards a proximal end of the pre-filled syringe.