CLAIMS

1. An electrode for a conducted electrical weapon (“CEW”), the electrode comprising:

a front wall;

a spear, the spear coupled to the front wall, the spear for coupling the electrode to a target to deliver a current to impede locomotion of the target;

a winding of a filament, the filament for providing the current to the target;

a rear wall, the rear wall including an opening; and

a body having a cavity therein, the winding positioned in the cavity, a forward portion of the body detachably coupled to the front wall, a rearward portion of the body coupled to the rear wall; wherein:

a first end portion the filament extends rearward of the rear wall through the opening, the first end portion for coupling to a provided signal generator of the CEW, the signal generator provides the current;

a second end portion of the filament is coupled to the front wall and remains coupled before, during, and after impact of the electrode with the target;

the second end portion of the filament extends forward of the front wall; and

responsive to impact of the electrode with the target, the forward portion of the body detaches from the front wall, the front wall remains coupled to the target.

2. The electrode of claim 1 wherein:

the forward portion of the body is crimped to detachably couple the body to the front wall; and

a force of impact of the electrode with the target decouples the body from the front wall whereby the front wall remains coupled to the target while the body moves away from the target.

3. The electrode of claim 1 wherein:

the front wall comprises a channel and a retainer;

the second end portion of the filament is positioned in the channel forward of the front wall;

the retainer retains the second end portion of the filament in the channel; and

the retainer couples the second end portion of the filament to the front wall before, during, and after impact of the electrode with the target.

4. The electrode of claim 1 wherein the second end portion of the filament that extends forward of the front wall provides the current via a circuit formed by at least one of contact of the second end portion with the target, ionization of air in a gap between the second end portion and the target, ionization of air between the second end portion and the front wall, and ionization of air between the second end portion and the spear.

5. An electrode for launching toward a target to deliver a current to the target to impede locomotion of the target, the electrode comprising:

a body having cavity therein and an opening to the cavity,

a front wall, the body detachably coupled to the front wall;

a spear coupled to the front wall, the spear for coupling to the target; and

a filament wound into a winding, the winding positioned in the cavity, a second end portion of the filament coupled to the front wall, a first end portion of the filament extending from the cavity through the opening, the first end portion of the filament for coupling to a high voltage circuit of a handle of a CEW; wherein:

while the electrode files toward the target, the filament deploys from the winding through the opening in the body;

a force of impact of at least one of the spear and the front wall with the target decouples the body from the front wall, the second end portion of the filament remains coupled to the front wall, the body moves away from the target along the deployed filament; and

the high voltage circuit delivers the current to the target via the filament.

6. The electrode of claim 5 wherein a forward end portion of the body is crimped to detachably couple the body to the front wall.

7. The electrode of claim 5 wherein:

the front wall comprises a retainer; and

the retainer couples the second end portion of the filament to the front wall.

8. The electrode of claim 7 wherein the retainer retains the second end portion of the filament coupled to the front wall before, during, and after impact of the electrode with the target.

9. The electrode of claim 5 wherein as the filament deploys from the winding, the winding unwinds from an inner portion toward an outer portion of the winding.

10. The electrode of claim 5 wherein delivery of the current to the target comprises electrically coupling the first end portion of the filament to the spear.

11. The electrode of claim 10 wherein electrically coupling the second end portion of the filament to the spear comprises the current ionizing air in a gap between the second end portion of the filament and the spear.

12. The electrode of claim 10 wherein:

a portion of the front wall is formed of a conductive material; and

electrically coupling the second end portion of the filament to the spear comprises the current ionizing air in a gap between the second end portion of the filament and the portion of the front wall to provide the current through the front wall and the spear.

13. A conducted electrical weapon ("CEW") for providing a current through a target to impede locomotion of the target, the CEW comprising:

a handle, the handle includes a high voltage circuit and a propulsion system; and

an electrode, the electrode includes a body, a front wall, a spear, and a filament; wherein:

the body has a cavity and an opening to the cavity;

the front wall detachably couples to the body;

the spear couples to the front wall;

the filament is wound into a winding, the winding is positioned in the cavity, a second end portion of the filament is coupled to the front wall, a first end portion of the filament

extends from the cavity through the opening, the first end portion of the filament mechanically couples to the CEW and electrically couples to the high voltage circuit;

the propulsion system launches the electrode away from the handle toward the target;

as the electrode flies toward the target, the filament deploys from the cavity through the opening, thereby unwinding the winding;

upon impact of the electrode with the target:

the spear mechanically couples to the target;

the body detaches and separates from the front wall; and

the second end portion of the filament remains coupled to the front wall; and

the high voltage circuit provides the current through the target via the filament and the spear.

14. The electrode of claim 13 wherein providing the current through the target via the filament and the spear comprises electrically coupling the second end portion of the filament to the spear.

15. The electrode of claim 14 wherein electrically coupling the second end portion of the filament to the spear comprises the current ionizing air in a gap between the second end portion of the filament and the spear.

16. The electrode of claim 14 wherein:

a portion of the front wall is formed of a conductive material; and

electrically coupling the second end portion of the filament to the spear comprises the current ionizing air in a gap between the second end portion of the filament and the portion of the front wall to provide the current through the front wall and the spear.

17. The electrode of claim 13 wherein:

the front wall comprises a retainer; and

the retainer couples the second end portion of the filament to the front wall.